

JUNE, 1954

MATERIAL HANDLING **FLOW**

HANDLING • AUTOMATION • PACKAGING AND SHIPPING

FRANCHISE
CIRCULATION

HANDLING IN A "BEST MANAGED" FIRM

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WHAT'S AHEAD FOR INDUSTRIAL RADIO?

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SLASH COSTS OF HANDLING IN SHIPPING

PAGE 126

Flow Circulation

{ 35,827 FLOW BASIC
108,509 FLOW QUARTERLY

New Westinghouse FRONT END LOADER



has 74-inch turning radius



HIGH DUMPING HEIGHT—a full 73" above floor—makes it easy to load trucks or high platforms. There is no heavy structural steel framework in front to obstruct the operator's view.

GOOD VISIBILITY, when the bucket is up, as well as when it's down, helps the operator work fast. Even in tight quarters, this compact machine is easy to maneuver.



FINGERTIP CONTROLS, right at the steering wheel, help speed operations. The bucket can be rocked into the load to fill evenly and fully in just one pass.



• Here's a real timesaver where you have to move bulk materials in and out of boxcars, whip around sharp corners or move about in tight quarters. It is Westinghouse Air Brake Company's new $\frac{1}{2}$ - $\frac{5}{8}$ yard Front End Loader, which can help reduce the cost of handling bulk materials in chemical, cement, and fertilizer plants, in foundries, and breweries. It has a short 46" wheelbase that makes it easy to maneuver.

A new planetary-reversing clutch-type transmission, integrally mounted on the driving axle, reduces normal reversing time about 95%. All controls are on either side of the steering wheel—the operator can load, lift, dump, or shift with just a short movement of his hand. A higher than normal bucket travel gives the operator a good view in front; whether he has the bucket raised or lowered, he can always see what he is doing and where he is going. All these advantages help to speed materials-handling operations.

Write for a free copy of our new brochure, which contains complete dimensions and specifications for this Westinghouse TL-50 Front End Loader.



Westinghouse Air Brake COMPANY

INDUSTRIAL PRODUCTS DIVISION

WILMERDING, PENNA.

Manufacturers of air compressors, pneumatic cylinders, actuators, air control devices of all kinds, engineered pneumatic control systems and front end loaders.

Factory Branch: Emeryville, Calif. Distributors throughout the United States...see your Classified Directory. Distributed in Canada by: Canadian Westinghouse Co., Ltd., Hamilton, Ontario.

Circle No. 146 on Reader Service Card for more information

Next Time **Job-Fit Industrial Tires** by **Size · Tread · Compound**



For tops in traction, get Goodyear's even-wearing All-Weather Tread Industrial Solid, shown above

HERE'S how to cure the headaches that come from using the wrong industrial tires. Call your Goodyear Dealer and let him specify the "right tire for the right job." Let him show you how to get top performance from your industrial tires by job-fitting them these three ways:

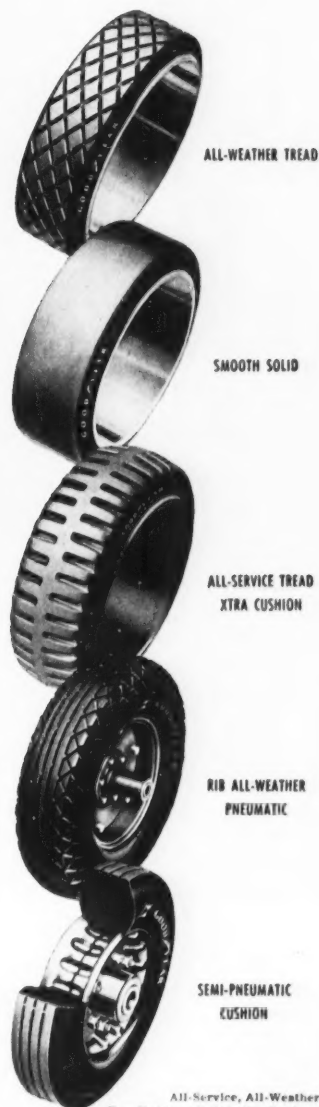
Right Size for your equipment. Goodyear has over 100 different solid tire types and sizes plus a full line of pneumatic and semi-pneumatic tires — America's most complete line of industrials.

Right Tread for your plant's floor surfaces. Smooth and Grooved for easy rolling. All-Service or the famous All-Weather, wherever traction is needed.

Right Compound for longer tire life. Goodyear offers you a choice of either UNiversal chip-resistant or Neoprene oil- and acid-resistant compound at no extra cost.

Make the first step towards industrial tire savings in your plant by calling your Goodyear Dealer today. Or write:

Goodyear, Industrial Tire Sales, Akron 16, Ohio



All-Service, All-Weather, Xtra Cushion—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

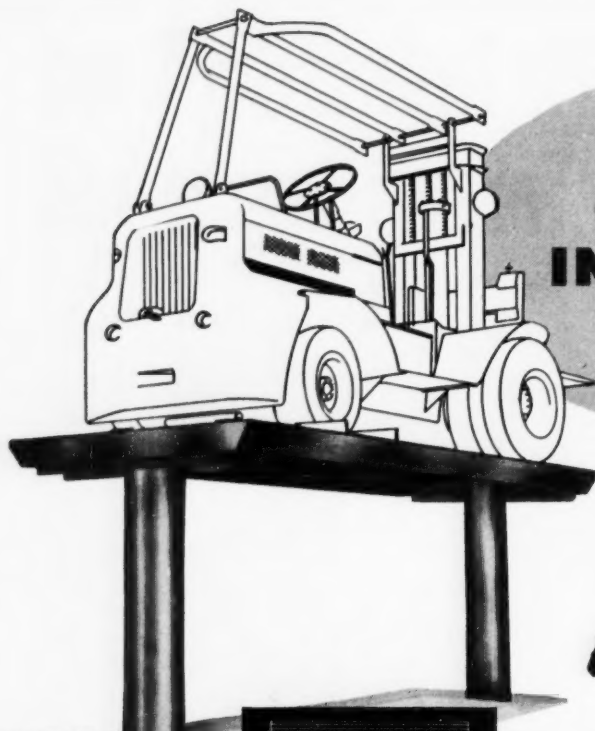
USE THE RIGHT TIRE FOR THE RIGHT JOB—USE

GOOD YEAR

INDUSTRIAL TIRES

We think you'll like THE GOODYEAR TELEVISION PLAYHOUSE—every other Sunday—NBC TV Network

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*Safe, Low-cost Maintenance
and Repair with* **WAYNE
INDUSTRIAL TRUCK
SERVICE LIFTS**

*Cut Servicing Time, Costs
Eliminate Hazards, Accidents
Get Thorough Maintenance*

INSPECT, service, lubricate, repair your industrial trucks safely in double-quick time with a Wayne Service Lift. Just run the truck on the Lift, press control button to raise Lift—your maintenance man can now work in complete safety, easily reach all parts of the truck's undercarriage.

Wayne Service Lifts are operated by compressed air or electric pumping unit. Wider bearing span gives greater load capacity on less power, smooth drop-proof operation, vertical and lateral stability. In down-position Lift is flush with the floor, giving you more than 100 square feet of space free for normal work.

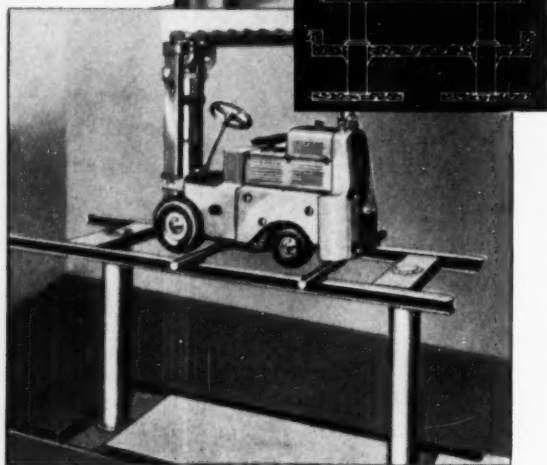
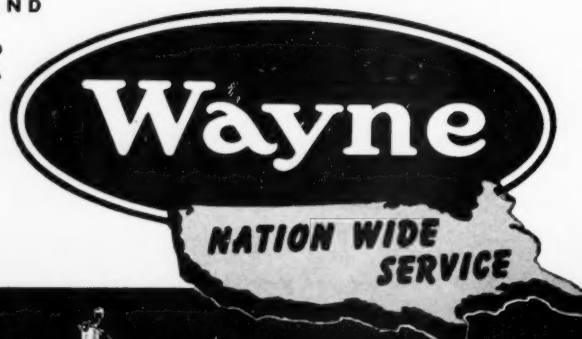
Get rid of dangerous makeshift methods. Get a Wayne Service Lift that's engineered to the job and do a *thorough* truck-servicing in half the time . . . twice as efficiently.

Write for "LIFTRONICS", illustrated data book on the complete line of Wayne Industrial Lifts.

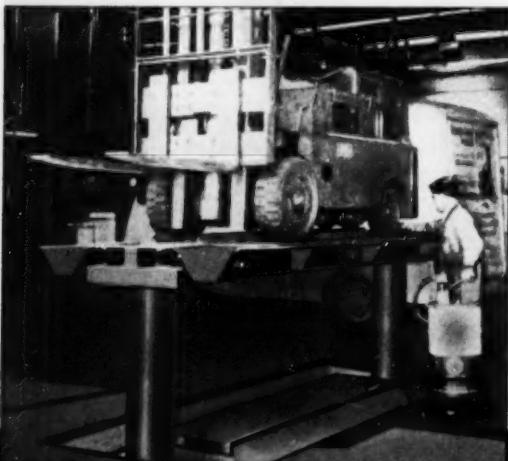
THE WAYNE PUMP COMPANY

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CANADA



Two-post Lift: drive-on or free-wheel types.
Automotive safety leg available.



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Here is a completely new, completely *different*, 24-page booklet...one of the most valuable aids ever offered in the Materials Handling field! Written for Automatic by a nationally-famous authority, it shows you how professional materials handling specialists analyze and chart operations...teaches you, in a simple, quick, easy-to-read way, how to uncover the "weak links" in your own materials handling and *chart for yourself* improvements that will give you greater efficiency and lower costs. Moreover, it is aimed at *your own field*, with case histories of what others are doing to lick the very materials handling problems that worry you most.

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Please rush to me, without cost or obligation, my copy of the newly published "Materials Handling **COST CUTTER**."

Firm.....

By.....Title.....

Street.....

City.....Zone.....State.....

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FLOW • JUNE, 1954

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Lift with AIR

GET THESE
ADVANTAGES

**CONTINUOUS
SERVICE**

without injury to motor



**CAN'T
BURN OUT**
from being stalled



**CAN'T
OVERHEAT**
from rapid reversals



NOT AFFECTED
by dust or fumes

THAT ALL ADDS UP TO

**LOWER
MAINTENANCE**

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CONTROLLED SPEED

variable from 0 to 17 fpm

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1,000 lb hoist weighs 28 lb



300, 1,000
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MATERIAL FLOW

JUNE, 1954
VOL. 9, NO. 9

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Published Monthly

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NESTIER... *first again*

IN SMALL PARTS HANDLING!

New economy and efficiency in assembly or production operations are assured by NestTier Hopper Racks. Designed to provide a constant supply of small parts, these new racks eliminate rehandling of parts at assembly points... provide fingertip accessibility... permit rapid replacement of empty units... simplify work station supply problems... reduce damage or loss inherent in frequent part transfers... facilitate more accurate inventory control.

Standard NestTier tote boxes are converted quickly into small parts hoppers by means of an easily attached combination lid and tray. Hoppers are supported at a 45° angle in housing racks that permit extreme flexibility of installation. Racks are

bench or wall-mounted, and multiple combinations can be made by bolting units together vertically, side-by-side or back-to-back. Two sizes of all-welded heavy-gage steel Hopper Racks and lids are available to handle No. 120 and No. 175 NestTier boxes.

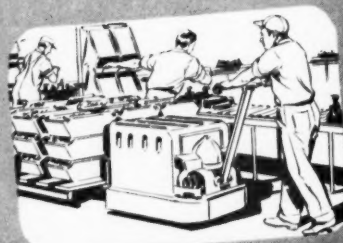
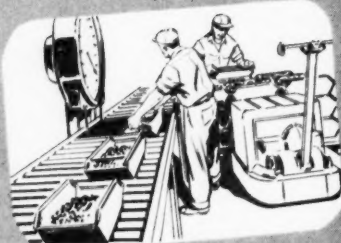
NestTiers can be filled at central point, batch weighed, delivered to assembly areas by hand or power lift truck and stacked at work stations as reserve supply ready for immediate use. Empty hoppers can be dismantled and replaced with full units in seconds. In addition, minimum floor space is required for temporary storage of empty NestTier boxes because of their nesting design.

THE CHAS. WM. DOEPKE MFG. CO., INC.
8836 BLUE ASH ROAD • ROSSMOYNE, OHIO

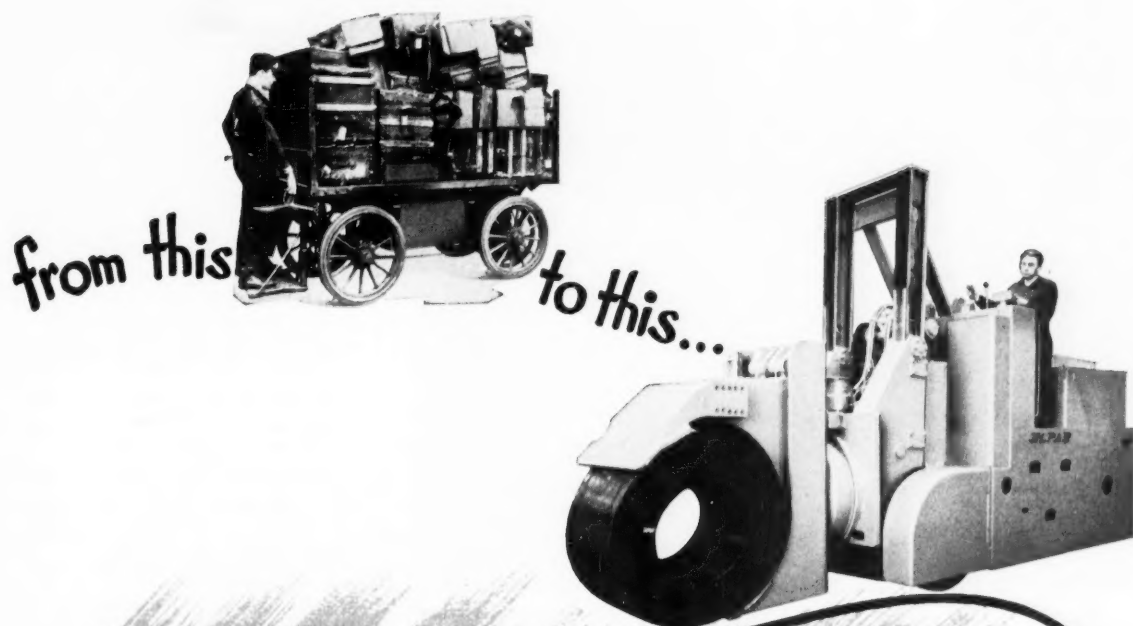
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WRITE TODAY FOR NEW
BULLETIN HR-101



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HOPPER
RACK
SPEEDS
ASSEMBLY
OPERATIONS**



in 48 years
ELWELL-PARKER Trucks
have progressed...



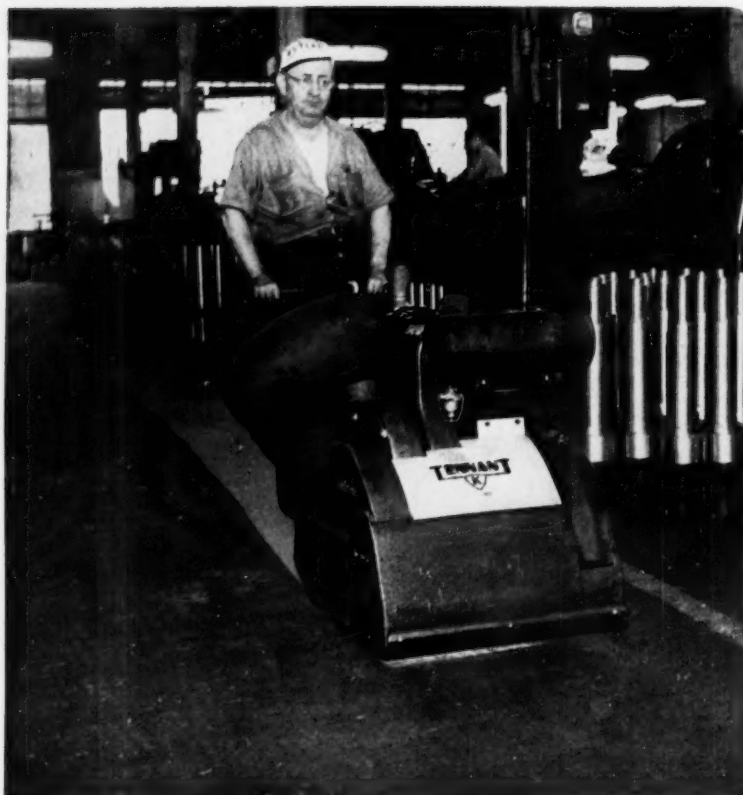
and now the trade name is streamlined to...

ELPAR

Forty-eight years ago The Elwell-Parker Electric Company produced the first powered industrial truck—truly a milestone in the science of materials handling . . . In the years since then, Elwell-Parker has pioneered many truck advancements. Now our product's name has been streamlined to *ELPAR*. Many of our customers and friends have already used this term, so the transition is an easy and logical one.

Circle No. 50 on Reader Service Card for more information

Only the trade name has been changed. There will be no change in the ownership, management or policies of The Elwell-Parker Electric Company. We will continue to build industrial trucks with the same quality and dependability that has made Elwell-Parker a respected name wherever industrial trucks are used . . . The Elwell-Parker Electric Company, 4236 St. Clair Avenue, Cleveland 3, Ohio.



How one man with a TENNANT Floor Machine . . .

TENNANT "K" dry-shaves dirt from floor; cleans 16" path.

shaves grease-caked dirt from factory floors—in 1 operation

As you guide it down an aisle, this big powerful TENNANT Machine does a cleaning job you'll find hard to believe. It outperforms a crew of men.

It combines 3 operations, shaving off thick grease-caked dirt at the rate of 8 to 20 lbs. per minute!

1. **Shaves off thick deposits** from floor by high speed pulverizing action of scarifying cylinder. Cleans 16" path. Works dry—no need for water or detergents.
2. **Smooths and levels surface** by exclusive planing action; doesn't dig or gouge floor. Helps level humps. Leaves good clean surface for fast, safe trucking.
3. **Picks up soilage as it goes.** Hurls traffic-packed dirt and grime into hopper. Does entire cleaning job in 1 operation. Gas or electric models (to 7.3 hp); also 25 hp mobile-type units. Write today for details.



G. H. TENNANT CO.
2576 N. 2nd Street
Minneapolis 11, Minn.

FLOOR MACHINES

INDUSTRIAL MAINTENANCE EQUIPMENT

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LETTERS to the editors

More On Flip-Flop

To FLOW:

I take pleasure in acknowledging receipt of the April issue of your publication in which the Flip-Flop is featured.

I should very much like to extend mine and Olympic's appreciation for the wonderful job that was done. It is perfectly obvious that this kind of activity has helped to make FLOW the truly wonderful magazine that it is.

Our department heads are indeed impressed, and I am wondering if you would have an additional fifteen (15) copies.

Benno Bordiga
Director of Manufacturing
Olympic Radio & Television Inc.

Naturally, praise is always well received. We might add that we are still getting interesting letters on the Flip-Flop, which was featured in FLOW's April issue.

Multi-Storage Warehouse Problem

To FLOW:

We are in a multiple-story warehouse located on a private railroad track, and we are considering ways of streamlining the warehouse by the use of conveyors and trucks.

One of our great bottlenecks is getting merchandise from the second and third floors to the main floor or from the basement and sub-basement to the main floor. Our warehouse is located on a hill and, in the rear, the sub-basement is street level.

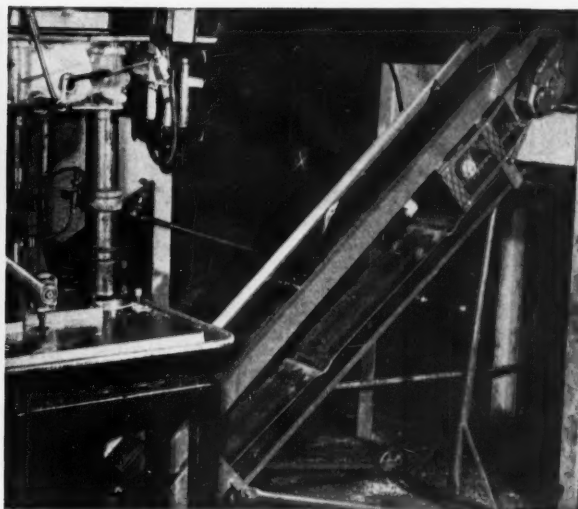
We feel that we could bring up merchandise to the main floor from the basement or the sub-basement, with our elevators, if we can get the merchandise from the second and third floors to the main floor by conveyors.

We have, therefore, checked on



HANDLING COSTS CUT WITH CONVEYOR

Youngstown Alloy Casting Corporation uses Rapistan gravity wheel conveyors to expedite movement of molds from forming, through drying oven to assembling and on to pouring floor. Further savings are effected by spraying and assembling molds while still on the conveyor, which then passes through drying oven at 600° F. Conveyors had been cutting costs for seven years when picture was taken.



MACHINE OUTPUT INCREASED

Utica Drop Forge & Tool Company increases operator's productive hours with this Rapistan "LP" cleated belt conveyor. Forgings are automatically elevated from trim press and deposited in sloping bottom bin for delivery to next operation. Operator does no handling; is freed for full time production. Rapistan cleated belt conveyors are available in light, medium and heavy-duty models.

Free *Rapistan*® field reports tell Profit Stories like these



ASSEMBLY OPERATIONS STREAMLINED

Magnetic starter assemblies in tote pans flow smoothly from one work point to the next on Rapistan RW gravity wheel conveyor lines in this large midwestern plant. Operators receive pans from one conveyor line and pass them along on another, keeping work space uncluttered and increasing output. Lines are "pitched" just enough to move pans at speed desired. Rapistan wheel conveyor is available in many widths and capacities. Straight sections, curves and spurs can be arranged to cut costs in any plant layout.

• Gain from this experience



Send today for fast-reading, fact-filled reports on handling problem solutions in *your* field. Full details on equipment installed, savings achieved. Free 16-page catalog also included. Indicate your interest on coupon and mail to:

The RAPIDS-STANDARD COMPANY, Inc.
167 Rapistan Building, Grand Rapids 2, Michigan

Please check your business classification:

☐ Manufacturing ☐ Agricultural ☐ Wholesale ☐ Retail
Check reports below which will be of greatest benefit to you:

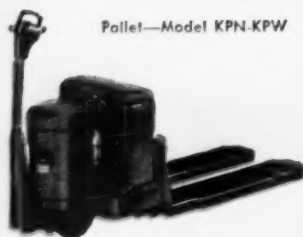
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| <input type="checkbox"/> Freight Terminals | | |

There are many other Rapistan Field Reports. If your business is not listed, please tell us about it.

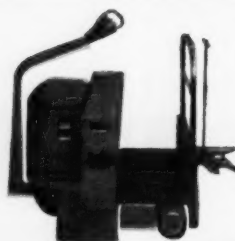
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CONVEYORS, gravity and power belt • INDUSTRIAL CASTERS • WHEEL-LESS TRUCKS

Representatives in all Principal Cities Throughout the World

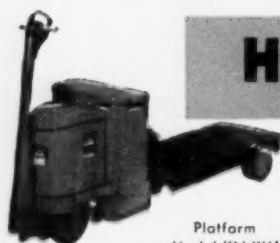
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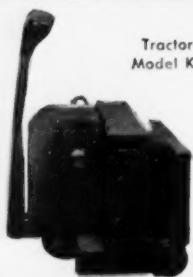
Pallet—Model KPN-KPW



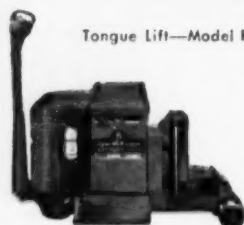
Rider tractor—Model KTR



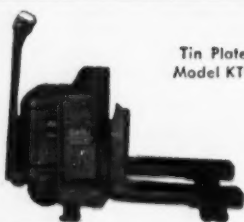
Platform
Model KN-KW



Tractor
Model KT



Tongue Lift—Model KTL



Tin Plate
Model KTP



LIFT TRUCKS
INCORPORATED



High Lift—Model KHL

HydroElectric

LIFT TRUCKS

**For the Heavy Load
For the Light Load
For the Unusual Load**

Look over the models illustrated. Some one of these trucks is adaptable to your needs. Whether you want to pull—push—carry or lift there is a model for every possible use. The many fleets of HYDROELECTRICS today carry products of every kind, shape and description are convincing evidence of their unusual application.

Write today for FREE Catalog No. 35 featuring complete line of Lift Trucks.

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CINCINNATI 14, OHIO

LETTERS

Continued

the enclosed card numbers of advertisements in your April issue, which we feel cover some of the equipment that might help us. In addition, though, to the numbers which we have checked on the enclosed card, we want to ask about other equipment that is written up in your magazine . . . We feel that while we are speeding up our office procedure, we should also speed up and streamline our warehouse operations, and look forward to hearing from you on this subject.

Joseph Boillin
Boillin-Harrison Co., Inc.

We have furnished Reader Boillin with information regarding warehousing and equipment. If any of our readers have comments to make on the subject, FLOW would be glad to pass them along for consideration.

Italian Firm Needs Aid

To FLOW:

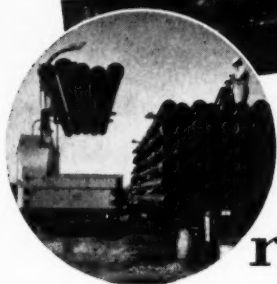
We have received, through our Department of Commerce, a request from an Italian firm concerning material handling for wholesalers. They wish information on this subject, especially in relation to the speedy loading and unloading of beer from trucks for delivery to the retailer or consumer.

We would very much appreciate any aid you can give us in helping this firm. We noticed your section, "Material Handling for Wholesalers" . . . If you can do so, we would like reprints of this section in duplicate, since one is sent to the firm and the other retained for the Department of Commerce files.

Ann Henkle,
Manager,
Research Information Service
U. S. Department of Commerce

The article referred to was published in November 1951, and we are searching our files for extra copies for the Department of Commerce. This is another testimonial to FLOW's constant usage through the years.

Circle No. 84 on Reader Service Card for more information



Traveloader[®] replaces 3 trucks and releases 6 men for other work

● A Traveloader is used by Kyle-Taylor Lumber Company, Berwick, La., to transport pipe from river dock to storage. It has replaced two pipe trailers and a gin-pole truck formerly used on this job, reduced man-power required from 15 to 9 and made time savings of about 70%.

This company, serving oil producers, receives pipe in barges at the river dock. A truck crane unloads and places the pipe on the dock. The Traveloader picks it up five lengths at a time, transports it to the storage yard, and stacks it neatly on racks for further disposition.

Time studies reveal the speed with which Traveloader works. Loading time at dock averages 35 seconds. Hauling to storage, stacking and returning to dock (round trip .55 miles) averages 3 minutes 8 seconds. The stacking part of this operation takes only 24

seconds! As a result the crane at the dock never has to wait for the Traveloader.

Since the company operates 24 hours, 7 days per week, the cost savings are substantial. Moreover, 6 more workers were made available without increasing payroll, and two less mechanized units require maintenance. "This machine is by far the finest that I have seen for handling pipe. It has doubled our capacity with less labor," says Mr. J. E. Kyle, Jr., Vice President.

Write for Bulletin 1360. It completely describes the remarkable TRAVELOADER that carries like a straddle truck, delivers like a road truck, and stacks like a fork truck. The Baker-Raulang Company, 1219 West 80th Street, Cleveland 2, Ohio.

Baker
industrial trucks

Circle No. 14 on Reader Service Card for more information



Keep Merchandise Moving with Roller or Belt Conveyor

• With an experience record of more than 45 years—Standard is known as headquarters for any "package" conveyor need—can help you to handle packages, parts, units—faster—at lower cost with gravity or power roller, belt, slat, chain, wheel or pushbar conveyors. For complete information write Dept. FL-64.



Load-Unload • Stack • Elevate with a HANDIPILER

• Handles sacks, boxes, cases, cartons, bundles—conveys up or down. Built in 14 and 24 inch widths; boom is designed to pile cartons up to 17 ft.—sacks to 12 ft.—projects into cars, trucks, trailers. Handles commodities up to 135 lbs. Write Dept. FL-64 for Bulletin 63-D,

Build Your Own System with Standard HANDIDRIVE Pre-Built Units ...



• Handidrive belt, live roller and gravity roller conveyors consist of drive and take up units, and roller assemblies, intermediate framework, supports and hanger, to make complete conveyors—or to convert present gravity conveyors to power conveyors. Write for Bulletin 63-D, address Dept. FL-64.

STANDARD CONVEYOR COMPANY
General Offices: North St. Paul 9, Minnesota
Sales and Service in Principal Cities

Send for Bulletin 63-D,
describing the above
and other Standard Con-
veyor equipment. Ad-
dress Dept. FL-64.



ROLLER • BELT • SLAT • CHAIN • WHEEL
PUSH-BAR • SECTIONAL
PORTABLE CONVEYOR UNITS:
HANDIBELT • HANDIPILER
INCLINEBELT • LEVEL BELT • EXTENDOVEYOR
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CONVEYORS VERTICAL LIFTS • PNEUMATIC TUBE SYSTEMS

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... at Crescent Truck Division
Barrett-Cravens Company

G. W. Akerlow has moved
from assistant general manager



J. J. Curry



G. W. Akerlow

to general manager. J. J. Curry,
formerly assistant sales man-
ager, is now sales manager.

... at Allis-Chalmers Mfg. Co.

New president in charge of
transformer and switchgear
equipment is J. W. McMullen,
general manager of the Pitts-
burgh Works. In this position,
he will be responsible for op-
erations at the Pittsburgh and
Boston Works and for all trans-
former and switchgear opera-
tions at Hawley, West Allis,
and Terre Haute plants. Mc-
Mullen started with the Pitts-
burgh Transformer Co. in 1917,
10 years before it was acquired
by Allis-Chalmers.

... at Hinde & Dauch Paper
Co.

John J. Holzhauser was
named new office manager of
the Detroit factory, and Wil-
lard J. Clark assumes the same
position in Kansas City. Each
becomes a member of a three-
man managerial team reporting
directly to the company's ex-
ecutive offices in Sandusky.
Holzhauser joined the firm in



model **HAC**

(CAPACITY: 16 cu. ft. Payloads
12 cu. ft. Sheds)
Torque-converter drive now
standard. Gas or diesel.

New Torque Converters *boost* **PAYLOADER®** *output*

For faster, more economical bulk-materials handling

Here's good news to the users of "PAYLOADER" tractor-shovels. These two popular models now include torque-converter drive as standard equipment! Extensive testing of both units shows that new peaks of performance are provided. Prove to yourself that these two famous "PAYLOADER" tractor-shovels are still the finest in their class. Ask your "PAYLOADER" Distributor for a demonstration, or write The Frank G. Hough Co., 731 Sunnyside Avenue, Libertyville, Illinois.

Greater Output — because machines operate at highest speed in relation to load.

Lower Upkeep — because the oil cushion absorbs load shocks and because clutch life is greatly increased.

Easier Operation — because much gear-shifting and "clutching" are eliminated.

More Efficiency — because engine operates at most efficient speeds and without laboring or stalling.

YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE!



model **HAHG**

(CAPACITY: 24 cu. ft. Payloads
18 cu. ft. Sheds)
Torque-converter drive and
power-steering now standard.

THIS IS THE 2-WAY *Bendix* "MULTI-MASTER"

The Mobile
Radio With
A Thousand
Uses!



- The Bendix "Multi-Master" can be used as a fixed station.
- It can be used as a mobile unit.
- Easily adapted to narrow band operation.
- It works on either AC or DC current.
- It is available from 2½ to 60 watt output.
- Pull up . . . pull out . . . or pivot for easier servicing.
- It can be transported from one location to another.
- It can be transferred from one vehicle to another.

The Bendix Multi-Master incorporates all the new and outstanding features of Bendix 2-way radio. It has range and power. Static free reception. Longer life components. Low power drain.

Bendix offers a complete line of accessories from hand sets to speakers, antenna to shock mounts . . . plus all technical help in obtaining license and complete system engineering.

It costs no more to own the best . . . so look at Bendix Radio before you buy. For complete details and specifications, write today to the address below.

Bendix Radio

DIVISION OF BENDIX AVIATION CORPORATION
BALTIMORE 4, MARYLAND

Export Sales: Bendix International Division,
205 E. 42nd St., New York 17, N. Y., U. S. A.

West Coast Sales: 10500 Magnolia Blvd.
North Hollywood, California

Canadian Distributor: Aviation Electric, Ltd.,
200 Laurentian Blvd., Montreal, Quebec

Circle No. 18 on Reader Service Card

14

MEN IN THE NEWS

Continued

1937, and worked in the purchasing and accounting departments before becoming Kansas City office manager in 1952. Clark has been associated with Hinde & Dauch since 1929 and has worked in a number of different departments.

. . . at Acmor Conveyor Chain Co.

J. T. AuWerter, Jr. has been elected president. He will devote most of his efforts to the sales activities of the company. AuWerter has spent most of his life in Cleveland, and has interests and experience in machine shop and heat treating operations.

. . . at Chrysler Corporation

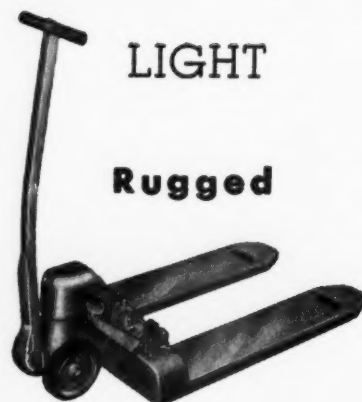
J. Emmett O'Malia is the new supervisor of sales engineering for the Marine and Industrial Engine Division. O'Malia started his career with Chrysler Corporation in 1936 and served in all phases of engine assembly, scheduling and special assignment.

. . . at Evans Products Co.

Ben Colman rejoined the firm and will operate in an executive capacity. He was associated with the firm for 24 years, prior to going to General American-Evans Company as president.

. . . at Richardson Scale Co.

The appointment of Dr. William H. Newman of Columbia University to the board of directors is announced. A member of the Columbia faculty since 1947, Dr. Newman was appointed Samuel Bronfman



Easy to Maneuver



Lightweight

HAND PALLET TRUCK

Look for long service when you choose a Raymond Lightweight Lift Truck to handle your pallet loads. Because this 2,000 lb. capacity truck is the sturdiest lift truck ever made!

Its one-piece welded forks are ½ times stronger than bolted forks. The pump piston is heavily chrome-plated to prevent leakage and prolong the life of the pump. Ram pistons, axles and lever shafts are made of heat-treated alloy steel for extra strength.

The Raymond Lift Truck is highly maneuverable too due to its light weight and 270° steering arc. It is foot-pedal operated, offers effortless pallet entry because of staggered booster rolls, has rugged, reinforced handle and dual-purpose brake.

WRITE FOR CATALOG Get the facts before buying your next hand pallet truck. Write for new Raymond Hydraulic Elevating Equipment catalog today!



ELECTRIC INDUSTRIAL TRUCKS
HYDRAULIC ELEVATING EQUIPMENT

The RAYMOND CORPORATION

3327 Madison St., Greene, N.Y.

Please send new Raymond Hydraulic Elevating Equipment Catalog.

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ STATE _____

Circle No. 145 on Reader Service Card

FLOW • JUNE, 1954

Professor in 1951. He is the author of several books and many articles on management and industrial problems.

... at Barber-Greene Co.

W. B. Greene became chairman of the board of directors and H. A. Barber succeeded him



W. B. Greene



H. A. Barber

as president. The company was formed in 1916 by Greene and H. H. Barber. H. A. Barber started with the firm in 1933, and became vice president in 1937.

... at Standard Products Co.
Reid Products Division

Chief Manufacturing Engineer, Bruce M. Smith, will instruct at Iowa State University, June 14-26. Material Handling is one of the optional subjects offered in the Summer Management Course, and Smith will head this department. A graduate of Purdue, he has been associated with Standard Products for the past year. Previous to that time he served as development engineer with the Armstrong Cork Company. This will be Smith's sixth summer as instructor at the University.

... at Hewitt-Robins Inc.

Charles W. Staacke, of Buffalo, N. Y., outstanding authority on conveyor belt design, construction and installation, died suddenly Friday, April 9, at the age of 56 in Detroit. He was technical advisor on conveyor and belting sales for the company. A graduate of Ohio State University, he worked for many years with the B. F. Goodrich Company before joining Hewitt-Robins in 1948.

SAVED SIX FEET in EVERY AISLE

with



Electric TIERING TRUCK



MODEL E25T • Cap. 2,000 lbs. Also available in 3,000 lb. cap. model.

ANOTHER LARGE WAREHOUSE actually halved its aisle space with a RAYMOND Tiering Truck! Aisles 12-ft. wide were reduced to 6-ft. Result: more useable storage space.

NOW YOU CAN make comparable space savings in your own plant or warehouse with a RAYMOND Tiering Truck. Because this truck actually right-angle tiers 4-ft. pallet loads from aisles only 6-ft. wide. Think what this means in increased storage capacity without enlarging your present facilities!

RAYMOND TIERING TRUCK ... operates in narrow aisles due to its short length and patented* off-set drive wheel with 200° turning arc. The truck's lightweight permits use on low-capacity elevators, floors. 51" free lift enables loads to be stacked in low-ceiling areas, truck trailers, boxcars without increasing overall height. Truck is equipped with new power unit that opens up like a book for fast, easy servicing.

**GET
FULL
DETAILS!**

The RAYMOND CORPORATION

3338 Madison St., Greene, N.Y.

- () Please send Bulletin 830 describing 2,000 lb. cap. Tiering Truck.
- () Please have your representative call.

NAME _____ TITLE _____

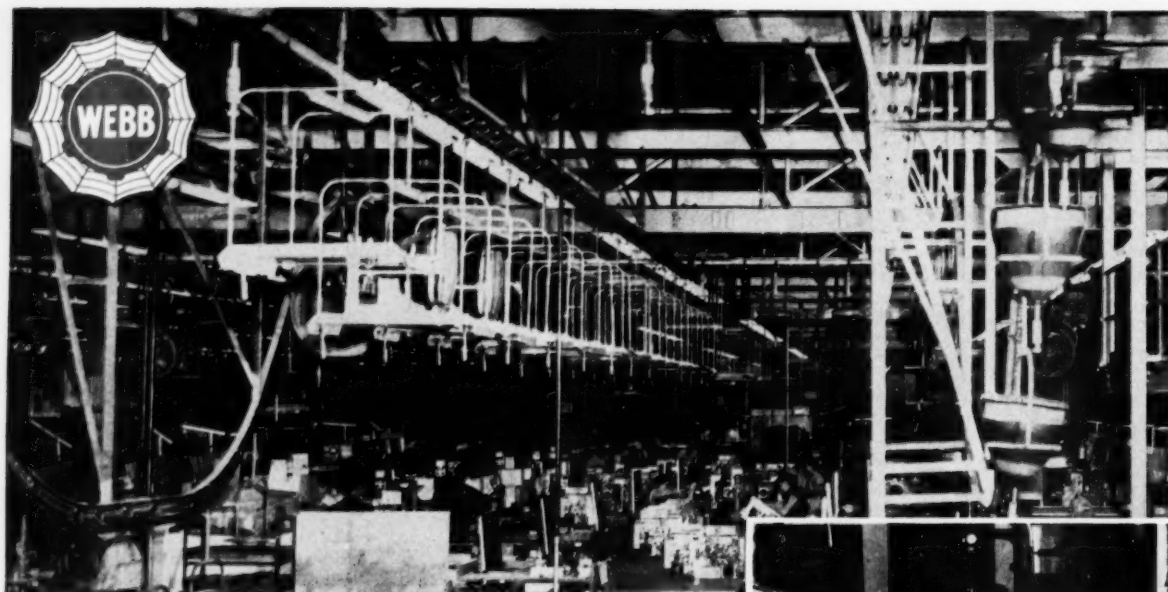
COMPANY _____

STREET _____

CITY _____ STATE _____

* PATENT NO. 2,564,002

Circle No. 146 on Reader Service Card for more information



Westinghouse *"Miracle Mile"* of Webb Conveyors



This Webb Conveyor System is called the "Miracle Mile" because it represents the last word in controlled travel for production components in the Metuchen, N. J. plant of Westinghouse, one of the world's leading manufacturers of TV receivers. For, production areas are kept clear, manual handling is at a minimum, and parts are delivered by Webb Conveyors where and when needed.

The assignment of marshaling the many components of a TV set was no mean engineering feat. Special pallets for TV chassis and adjust-

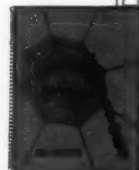
able shock-resistant cradles for picture tubes were designed to deliver these items to final assembly in perfect condition. The photos above show how both tube and chassis are held and protected against strains and impact as they move along the Westinghouse "Miracle Mile."

Despite the fact that carloads of assembly materials are handled in the "Miracle Mile" of travel, there is no floor congestion . . . because Webb Trolley Conveyors travel the airways overhead, and dip down to bench level only where needed.

Additional Webb Services—Through its subsidiaries, Control Engineering and Webb Forging Co., the Jervis B. Webb Co. designs and manufactures electronic and electrical controls for conveyors, machine tools, etc. Also quality drop forgings.

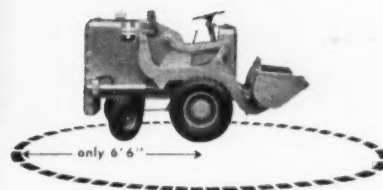
JERVIS B. WEBB CO.
Conveyor Engineers and Manufacturers
1725 ALPINE AVENUE • DETROIT 4, MICHIGAN

Send for fully
illustrated catalog
that provides com-
plete information
on Webb conveyors



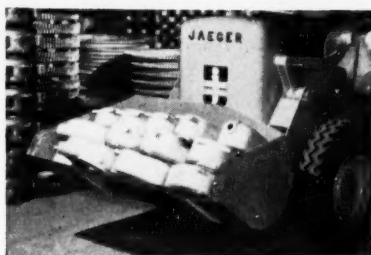
FACTORIES: DETROIT • LOS ANGELES • HAMILTON, ONTARIO
OFFICES AND REPRESENTATIVES THROUGHOUT THE WORLD

Circle No. 138 on Reader Service Card for more information

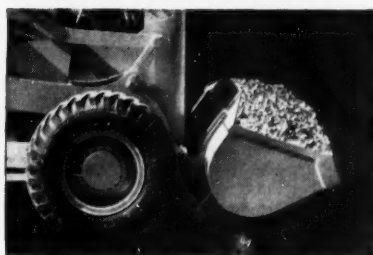


5" shorter turning radius (only 6'6") and faster speeds up to 13.88 mph in reverse, 7.66 forward.

MOVE HEAVIER LOADS . . . TRAVEL FASTER . . . TURN SHORTER, QUICKER . . . DUMP HIGHER AND FARTHER*



20% more lifting capacity (1200 lbs.).



Low level bucket tilt-back permits full bucket loading, better carrying.



Higher dumping clearance of 4'6" under lip; 6'8" under hinge. Longer reach of 2'7".

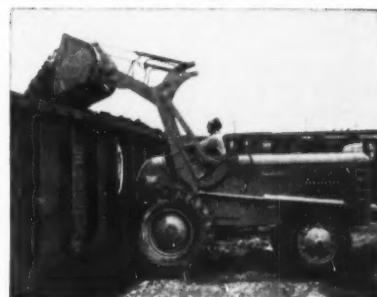
Latest Jaeger 12 cu. ft. Auto-Scoop speeds one-man handling of bulk material

To help you cut the cost of bulk material handling, here's a scoop loader that's been developed *specifically* for most efficient operation. The Jaeger Auto-Scoop brings you greater power, speed and maneuverability to get more work done.

Bigger lifting capacity helps you handle heavier loads. Shortest turning radius speeds work in narrow aisles, box cars, cramped quarters. Highest dumping clearance and longer reach give greater range of load placement. Faster speeds, both forward and reverse, cut maneuvering and travel time. Independent forward-reverse control permits instant changes in direction, quick get-away.

Boom arms crowd the bucket forward as it rises — provide fast digging, full bites. Front driving wheels are at the fulcrum of the load . . . heavy loads help move themselves by increasing tractive power. Power tilt-back enables operator to crowd into material and flip bucket back before hoisting, insures a full load, and makes possible lower bucket level position for better carrying. Simplicity and ease of control, and effortless hydraulic functioning, encourage faster operation.

For complete facts, send for Catalog L12.4 and name of distributor who sells and services the Jaeger Auto-Scoop in your city.



For bigger work, 1 cu. yd. model, with torque converter and power steering, handles loads to 5,000 lbs. 2-wheel or 4-wheel drive.

* Based on comparisons with well-known scoop loaders now in the field.

The Jaeger Machine Company, 611 Dublin Avenue, Columbus 16, Ohio

JAEGER LOAD-PLUS *auto-scoop*

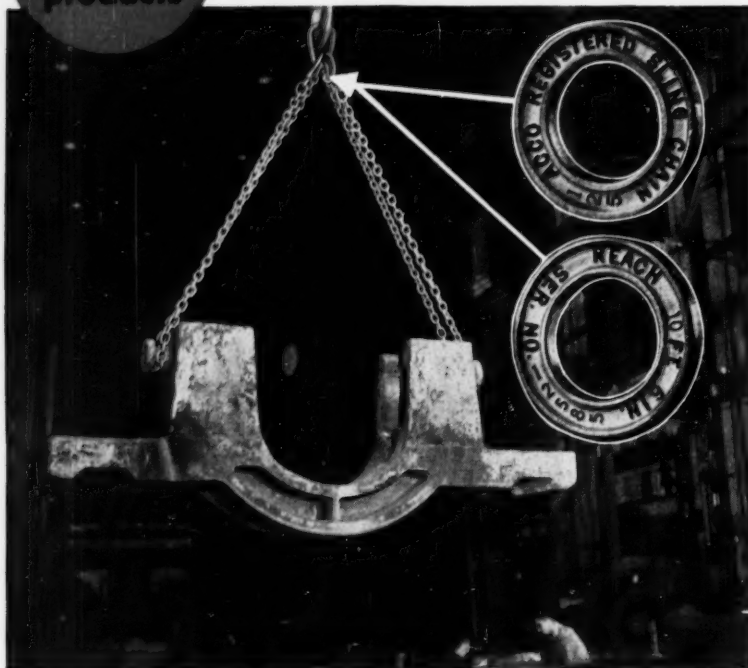
AIR COMPRESSORS • PUMPS • MIXERS • PAVING MACHINES

Distributors throughout U.S. and Canada and Principal Cities of the World

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ACCO
products

ACCO Registered* Sling Chains



What would it cost you if you dropped this casting?

• How many times a day do you gamble with a heavy load being lifted over expensive machines—or men? If you have ever dropped a load, you know the consequences. Time lost, damages—a general mess.

That's why you must be sure of the slings you use. That's why we suggest ACCO Registered Sling Chains with their inherent safety. For instance, a $\frac{3}{4}$ " double ACCO Registered Sling Chain used as a double-basket at a 60° angle has a working load limit of 11,400 pounds, almost six tons! Furthermore—it was proof-tested—overall—with a load equivalent to twelve tons.

With all this strength, ACCO Registered Sling Chains are light in weight... easy for your men to handle. That's because they're made of alloy chain which provides strength, great strength, with less weight.

There's much more to tell about these fine ACCO Registered Sling Chains. Call your ACCO Registered distributor today or write us for literature.

*Trade Mark Registered



American Chain Division
AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, Houston,
Los Angeles, New York, Philadelphia, Pittsburgh,
Portland, Ore., San Francisco, Bridgeport, Conn.

WHAT "ACCO REGISTERED" MEANS...

- 1 The best material
- 2 Unit safety factor (on bodies, rings, links, hooks)
- 3 Proof test of complete sling to twice the working load limit
- 4 Actual field service test of each design
- 5 Metal identification ring on each sling
- 6 Signed Registry Certificate with each sling



plus
Rings
Links
Hooks

Circle No. 5 on Reader Service Card for more information

news from the
SALES FIELD

The Morrison Company of Cleveland, Ohio is observing its 25th year of material handling equipment sales and service. The company's founder and president, **Harry C. Morrison**, celebrated the occasion at a



dinner at which his entire staff and officials from eight major suppliers were present. The staff of 21 includes eight salesmen, four service men and nine office personnel. Among the lines represented by the firm are: **Nutting Truck & Caster Co.**; **Barrett-Cravens Co.**; **Magline, Inc.**; **Hyster Company**; **Union Metal Manufacturing Co.**; **Robbins & Myers Inc.** and **Arrow Products, Inc.** The company operates in its own building with 10,000 square feet of space and three floor levels.

Some 50 franchise representatives will participate in the 1954 sales contest sponsored by the **Automatic Transportation Company**, according to **Foster W. Lamb**, general sales manager. The "Partners in Progress" contest began on April 1 and will run for six months.

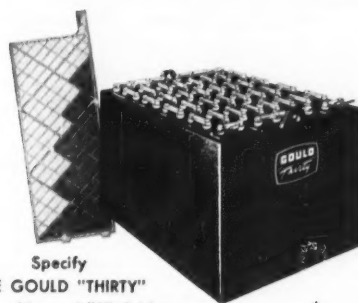
Also announced by Automatic are two new franchise representatives. **Van's Equipment Sales, Inc.**, 1110 Broadway, Albany, New York, will handle the eastern portion of upper New York and Berkshire County in Massachusetts. The **Western N. Y. Material Han-**



Endless Energy...

THANKS TO BATTERY POWER!

Industrial trucks work like beavers all day long when they're powered with new Gould "Thirty" Batteries with Diamond "Z" Grids. These batteries have *extra* strength, *extra* ruggedness, *extra* ability to work harder, longer, and at lower cost. Silent, safe, fume-free—there's *no* power like battery power, *no* battery power like *Gould* power.



Specify
THE GOULD "THIRTY"
with New Diamond "Z" Grids—
America's Finest Industrial Truck Battery

GOULD INDUSTRIAL BATTERIES

GOULD-NATIONAL BATTERIES, INC., TRENTON 7, N. J.

Always Use Gould-National Automobile and Truck Batteries

©1954 Gould-National Batteries, Inc.

Circle No. 70 on Reader Service Card for more information

**PUSH—
PUSH—
YOU PAY THEM TO
PUSH**

So—what a smart money-saving idea for you when they push **THE LIGHTTEST of METALS—**

MAGNESIUM

Brooks & Perkins of Detroit—pioneer Magnesium fabricators with a Magnesium mill that rolls plate and sheet—has developed the

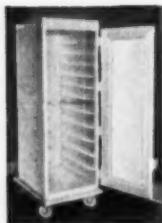
*MINIMAX
Pusharound*

made of Magnesium sheet, plate, and extrusions—unbelievably light in weight. They save worker fatigue, time, awkwardness and accidents.



Push shelf merchandise

Push factory scrap or trash



Push and load-into-trucks baked goods or candy

What do your people push that might be pushed easier and much more economically? Write or phone B&P for pictures, design, and price info. Tell us about your uses and present equipment, and let B&P engineers advise you about saving your Pushmoney with **PUSHA-ROUNDS**.

Brooks & Perkins, Inc.

Pioneer Magnesium Fabricators

1944 W. FORT ST. • TASHMOO 5-5900

DETROIT 16

Circle No. 26 on Reader Service Card

20

SALES FIELD

Continued

dling Corporation, 4400 Bailey Avenue, Buffalo, New York, will cover western New York and the northwestern portion of Pennsylvania for the electric fork truck manufacturer.

The **Lamson Corporation** announces the appointment of **W. G. Lanterman** as Cleveland Regional manager. He will head the Cleveland, Cincinnati, Pittsburgh, Indianapolis and Detroit districts. In addition to coordinating all sales and installation efforts in the Cleveland Region, Lanterman will act as liaison between Lamson Corporation and its sister company, **Lamson Mobilift Corporation**.



W. G. Lanterman

Adrian Drew, 125 South 3rd Street, Minneapolis, has been appointed **Wright-Hibbard** distributor for the Minneapolis-St. Paul area.

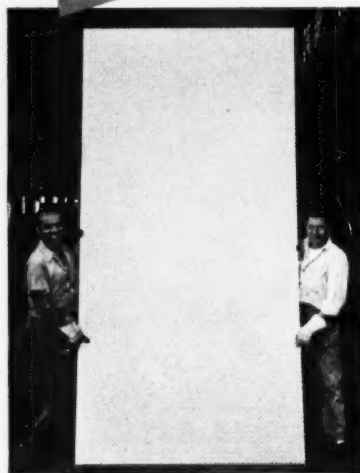
The **Cashman GMC Truck Company** of Las Vegas, Nevada, has signed an exclusive sales and service agreement with **Hyster Company**. The firm, managed by **James Cashman, Jr.**, will serve the Nevada counties of Nye, Lincoln, Esmeralda and Clark.

Speedways Conveyors, Inc. has equipped its field representatives with a new merchandising folder composed of twenty case history field reports. Submitted by a variety of industries in various sections of the country, the reports were pre-

Magnesium

Lightest of the
structural metals

**PLATE and
SHEET**



Magnesium Plate— $\frac{1}{2}$ " x 60" wide, 118" long, weighs just under 250 lbs. Can be rolled in non-slip Magnesium tread pattern.

Here's a flexible source:

the B&P Mill of Detroit. Special requirements—unusual sizes and gauges—odd lots, large, small and medium runs. Prompt delivery.

At your service: ideas and designs from the B&P engineers. Let them work with you on Magnesium parts or products, including fabrication and assembly.



BROOKS and PERKINS Inc.

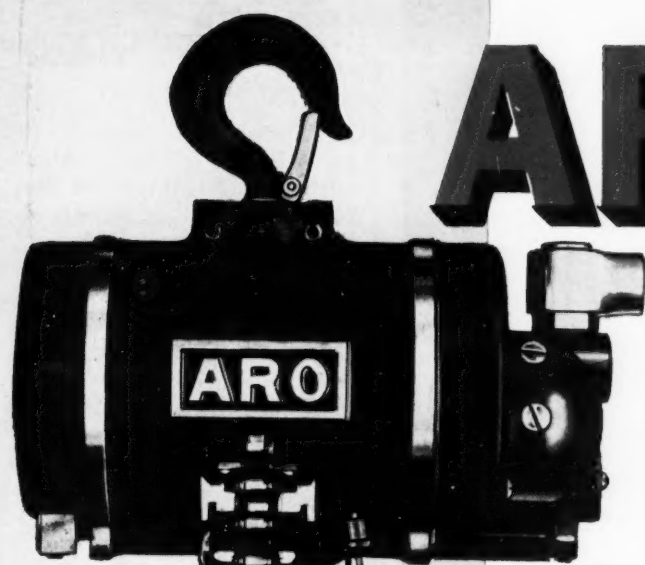
Pioneer Magnesium Fabricators

1944 W. FORT ST. Detroit 16, Michigan

TASHMOO 5-5900

Circle No. 25 on Reader Service Card

FLOW • JUNE, 1954



ARO

AIR HOIST

ACCESSORY EQUIPMENT



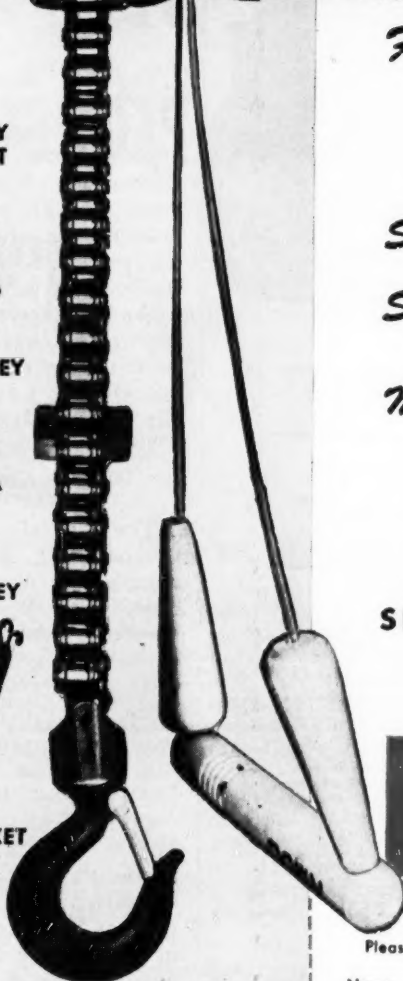
HOIST TROLLEY



HOSE TROLLEY



CHAIN BASKET



Faster... Quieter... wide speed range, 3 sizes.

300 lb.—lift rate 75 ft. per min.

500 lb.—60 ft. per min.

1000 lb.—40 ft. per min.

Smaller... one man can easily install.

Safer... no spark hazard . . . better all safety requirements.

More Useful... saves time and labor for shipping docks . . . heat treating departments . . . refineries, chemical plants and plating departments . . . machine shops and foundries . . . appliance, furniture, textile, automobile and aircraft assembly lines . . . stock rooms.

SEE YOUR ARO DISTRIBUTOR

The Aro Equipment Corporation, Bryan, Ohio

Offices in All Principal Cities

In Canada—Aro Equipment of Canada, Ltd., Toronto, Ont.

ARO

AIR HOIST

Also . . . Air Tools . . . Lubricating Equipment . . . Aircraft Products . . . Grease Fittings

The Aro Equipment Corporation, Bryan, Ohio

Please send full details on the new ARO Air Hoist, without obligation.

Name

Company

Street

City State

MICHIGAN APPROVED CRANES

ANY SIZE
ANY
CAPACITY



Engineered with All
the MOST WANTED FEATURES

IMMEDIATE DELIVERY

MICHIGAN has a national reputation for *immediate delivery* on custom-engineered cranes of unequalled dependability, durability and low cost! Literally hundreds of letters in our files from industries like yours is your absolute assurance of unbelievably prompt installation of a Michigan Approved Crane which meets your exact requirements. No finer cranes have ever been built, because Michigan quality-controlled manufacturing is never sacrificed, even in the smallest detail, to the most rigorous delivery deadline!

SHOCK RESISTING FLUID DRIVE

Power is transmitted through moving oil, protecting motor and drive mechanism from shock.

ANTI-FRICTION BEARINGS

Moving parts are mounted on ball or roller bearings, reducing wear from friction.

PUSH-BUTTON MAGNETIC CONTROLS

An all-important feature which protects motors against damage from overloads.

EXTRA-RIGID BRIDGE

Your assurance of the utmost in stability and safety, a plus Michigan feature.

LOWER HEAD ROOM

Lets you lift loads higher, allows more overhead space for stacking and storage.

SEND ME
YOUR NEW
CRANE
BOOKLET

Name
Address
City..... State.....

WRITE FOR FREE LITERATURE TODAY!
MICHIGAN CRANE & CONVEYOR CO.
117 McKINSTRY AVENUE • DETROIT 9, MICHIGAN

Circle No. 97 on Reader Service Card for more information

SALES FIELD

Continued

pared for the purpose of demonstrating to prospective clients the cost-cutting benefits of the company's products.

The Diamond Power Specialty Corporation announces the appointment of **Graybar Electric Company, Inc.** as national distributors of a new line of industrial television equipment, details of which will be revealed later.

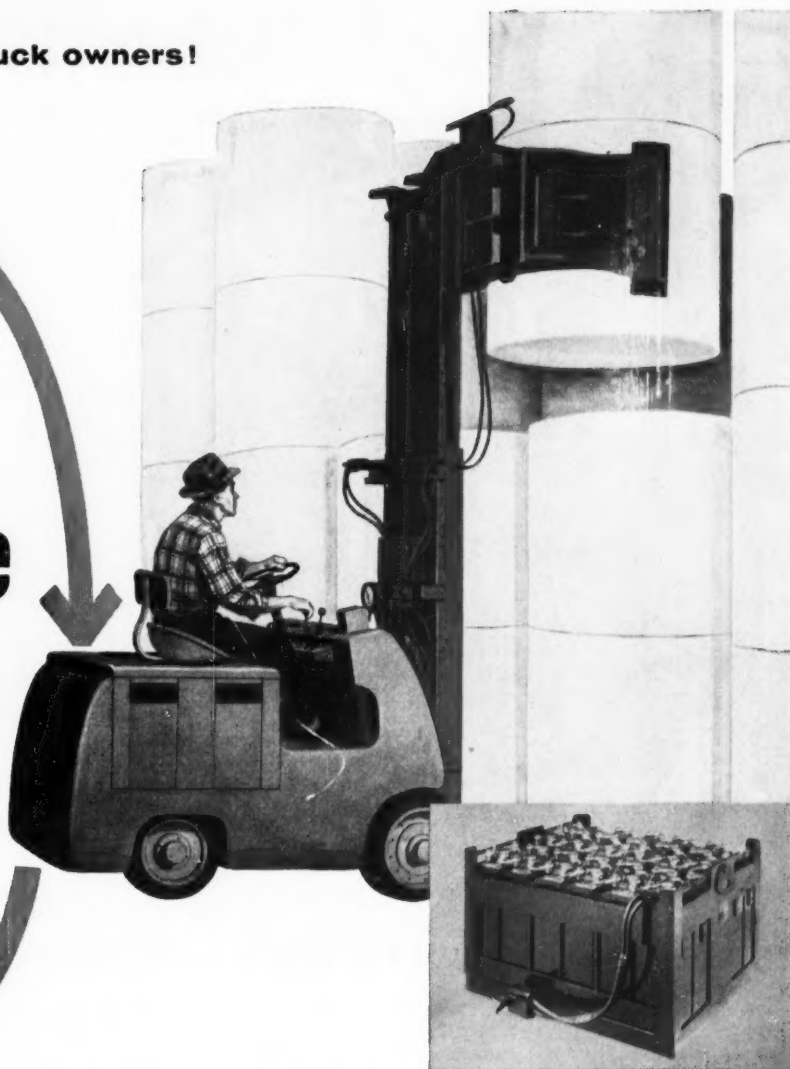
Two new distributors have been appointed by the Construction Equipment Division of Baldwin-Lima-Hamilton Corporation. **Bradley Equipment Company**, 1042 West Marietta St., N.W., Atlanta, will represent the firm in central and northeastern Georgia. **Innes Equipment Limited**, 930 Millwood Road, Toronto, will cover the Provinces of Ontario and Quebec, Canada, with offices also in Montreal.

The American Monorail Company has opened a branch office at 244 Water Street, Akron, Ohio. Assistant district manager **Jack Lamprecht** will be in charge of engineering, sales and service at the new office.

Coretti-Gross, Inc., Pelham Manor, New York, has been appointed franchise dealer for Chrysler industrial engines, parts and service in 15 counties of the metropolitan area, including New York City. The announcement was made by **C. C. Williams**, general manager, Chrysler Marine and Industrial Engine Division, Chrysler Corporation.

news for industrial truck owners!

Now...
25% more
capacity
here



... with the New EDISON "MC" type Battery!

Specifically designed to provide more power for modern driver-ride, sit-down fork trucks, this newest EDISON battery development provides *25% more capacity* than ever before available in nickel-iron-alkaline batteries . . . to suit the limited battery compartments of such industrial trucks. Extra power too, for operating various hydraulic devices which speed handling in plants and warehouses.

Besides this unusual space-capacity ratio, the new "MC" offers

all of the profitable features that are typical of EDISON Nickel-Iron-Alkaline Storage Batteries: steel plates and cell containers for the most rugged, long-life service—electrical characteristics that assure foolproof operation and outstanding dependability.

And like all EDISON batteries, the new "MC" is designed and built to give *more than twice the performance life* of other type batteries. Be sure to investigate this new EDISON development today!

If you operate battery electric industrial trucks, or are planning to purchase one soon, be sure to have the complete facts on the new EDISON "MC" type battery. Clip the coupon below and mail it today.

Edison Storage Battery Division
Thomas A. Edison, Incorporated
504 Lakeside Avenue
West Orange, N. J.

I'm interested in the new MC battery—

- ☐ Send me complete literature
☐ Have your representative call

NAME _____
TITLE _____
COMPANY _____
ADDRESS _____

Most dependable power...
lowest over-all cost
you get both with an EDISON



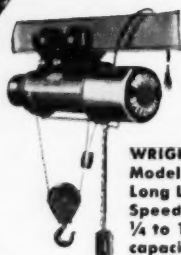
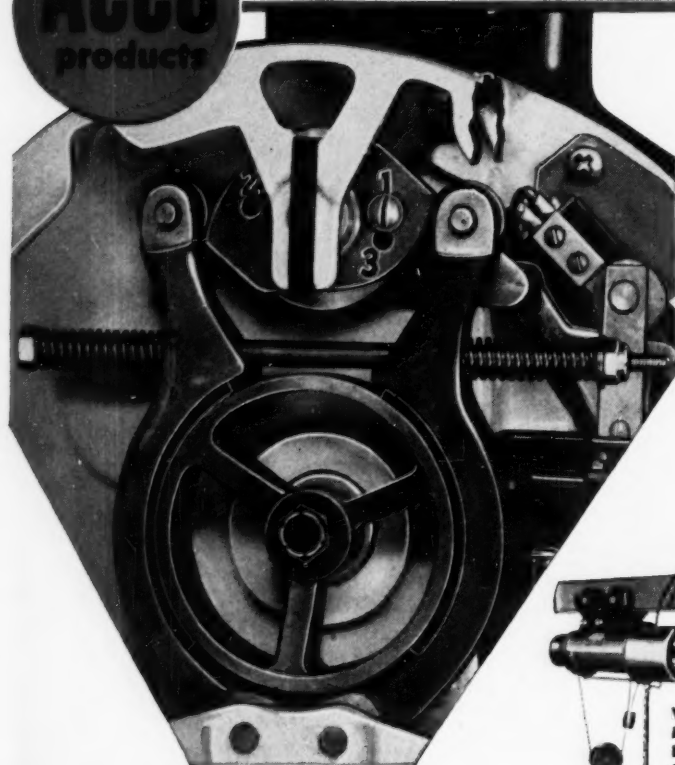
EDISON
Nickel • Iron • Alkaline
STORAGE BATTERIES

EDISON ALSO MAKES THE FAMOUS "V. P." VOICewriter AND THE TELEVOICE SYSTEM

Circle No. 47 on Reader Service Card for more information



Wright Hoists (1954 Models)



WRIGHT
Model L-1
Long Lift
Speedway
¼ to 1-ton
capacities

Nothing to adjust but the cam!

• The brake assembly pictured above for the **WRIGHT FRAME 1 SPEEDWAY HOIST** is your assurance of maximum hoist service... minimum down-time. Adjustment of this cam-actuated brake to compensate for brake lining wear is literally "as simple as ABC." *There is no guess work about it.*

When the load hook starts to drift, remove the screw shown at position No. 1 (see picture), swing the cam around so that position No. 2 is in line, and replace the screw that secures the cam to the solenoid lever arm. For the final one-third of brake lining wear, set the cam at position No. 3. This repositioning of the cam is the **ONLY** adjustment to be made by the users of **WRIGHT Hoists**. The

brake springs and solenoid are factory-set... **NEVER** need adjustment for brake lining wear.

Long life is a built-in characteristic of these hoists. They are built and guaranteed for service to the limit of the duty cycle of 30 minute, totally enclosed NEMA specification motors. These 1954 models provide full accessibility of parts for lowest maintenance costs. To get at the brake and controller, you remove two screws which hold the end cover. To get at the limit switch, transformer, and solenoid coil, you remove three screws and the side cover comes off. With this full accessibility you can make a brake adjustment or replace electrical parts in a matter of minutes.

Remember, **PRICE + MAINTENANCE = COST**. For full details on the low-cost **WRIGHT Frame 1 Hoists** see your **WRIGHT distributor** or write our York, Pa., office for literature.

ACCO



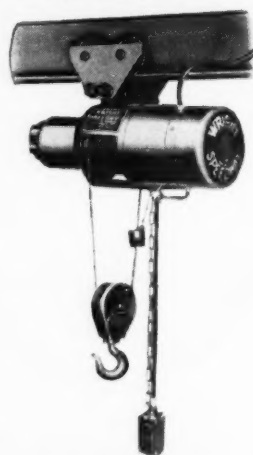
Wright Hoist Division
AMERICAN CHAIN & CABLE

York, Pa., Chicago, Denver, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

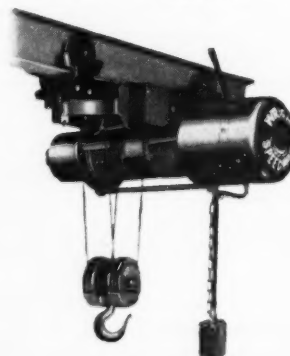
Hoists
Trolleys
Cranes

IMPORTANT Maintenance Features

- 1 **LONG LIFE**
- 2 **SERVICE ACCESSIBILITY**
End and side covers quickly removed for complete accessibility of brake, controller, solenoid, limit switch, transformer
- 3 **SOLENOID ASSEMBLY**
never needs adjustment, designed to compensate automatically for brake wear
- 4 **BRAKES**
require only two pre-determined field settings... no guess work
- 5 **FRAMES**
Strong, ductile
- 6 **GEARS**
Alloy steel
- 7 **MOTORS**
NEMA specifications



WRIGHT Frame 1
Parallel-mounted Speedway
¼ to 1-ton capacities



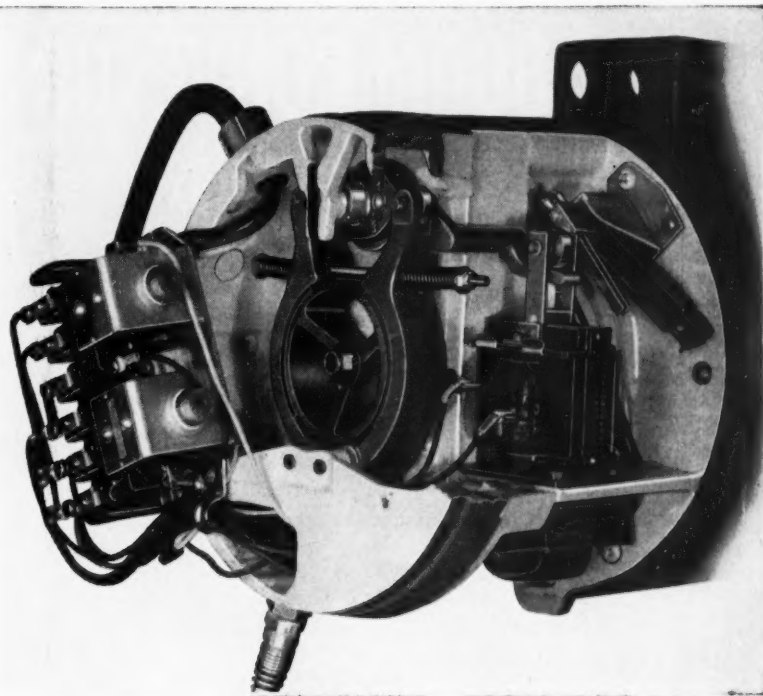
WRIGHT Model WH-1
Close Headroom Speedway
¼ to 1-ton capacities

Circle No. 6 on Reader Service Card for more information

FLOW • JUNE, 1954

Smash Maintenance Costs!

This partly cut-away illustration (with controller swung out of position) shows the full accessibility of parts provided in the 1954 models of WRIGHT Frame 1 Speedway Hoists. Note the simple, rugged design of brake and solenoid assembly.



Here's Why Wright Hoists Are Lowest in Maintenance Cost

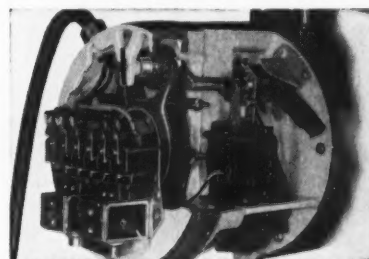
• The operating heart of an electric hoist is the solenoid-actuated brake assembly. The brake is automatically applied by springs unless the hoist is running. Then the force of the energized solenoid coil overcomes the spring pressure and releases the brake. Here's where trouble begins with ordinary hoists...keeping the delicate balance between brake spring pressure and solenoid coil pull. But you can't have this trouble with a WRIGHT Frame 1 Hoist because there is no manual adjustment of the solenoid coil...it's completely automatic!

And there is no manual adjustment of brake spring tension. Each of the two life-long brake springs has a foolproof setting. The holding nut screws down to a shoulder, and then they're set for the life of the brake lining. Tension in the springs is automatically compensated for by

the curvature of the brake cam. This precision cam provides uniform, balanced solenoid pull at every stage of brake wear...even after you reset cam at the pre-determined positions for additional brake lining service.

The brake needs adjustment only when the load hook starts to drift. There is *no guess work* in brake adjustment on these 1954 Model WRIGHT Speedway Hoists. It's just a matter of moving one screw into another precisely located hole in the cam. This is due to design of the double-acting brake cam which has three fixed...and numbered (1, 2, 3)...settings or holes. Factory setting is in hole No. 1. When the load hook starts to drift, lining will be worn so you can reset cam screw in No. 2 position. The next setting of the cam is at No. 3 position. There is *no adjustment of brake springs and no adjustment of solenoid coil*. The great

Controller back in operating position. Note that brake cam can be reset without moving controller.



possibility of human error is eliminated, so down-time is reduced to an absolute minimum.

The WRIGHT Frame 1 Speedway Hoists were designed to save you maintenance costs. You can prove their full accessibility and low cost maintenance if you place one or more on comparison test in your shop with any other type of hoist. Try a 1954 Model Frame 1. Put it to work. Let it prove itself on your job.

Your WRIGHT HOIST distributor will gladly give you further details. See him at once or write us for information.

REMEMBER: Purchase Price + Maintenance = TOTAL COST

Load and Unload Trucks and Trailers Easier—Faster—Safer
with this

ALVEY BOOM CONVEYOR



You can cut down "manhandling" of Packages at loading docks — reduce tie-ups of trucks and trailers for both incoming and outgoing merchandise.

Motor driven mechanism is reversible so the powered belt operates in either direction. Push button controls permit exact control by the operator.

An Alvey Engineer will be glad to discuss these power driven booms — or any conveyor problem with your technical staff.

Please write for an appointment.

 <p>LOADING</p> <p>Boom extends into truck and withdraws as required — always unloading at a convenient location.</p>	 <p>UNLOADING</p> <p>When truck backs to dock, conveyor extends as far into truck as required to unload easily.</p>	 <p>STORED</p> <p>When not in use, boom is withdrawn to clear dock aisle.</p>
---	---	---

Every time you **MAN**handle a package, you add to the cost and nothing to the value; therefore, put your packages on Alvey Conveyors that are engineered to fit your individual requirements.

ALVEY

ALVEY CONVEYOR MANUFACTURING COMPANY

9299 Olive Street Road, St. Louis 24, Missouri

BRANCH OFFICES IN PRINCIPAL CITIES

Circle No. 53 on Reader Service Card for more information

Calendar of Events

June 7-10

National Plastics Exposition,
Public Auditorium,
Cleveland, Ohio

June 8-9

Third Biennial Packaging & Materials Handling Institute,
University of Southern California,
Los Angeles, California

June 9-19

4th Mechanical Handling Exhibition & Convention,
London, England

June 14-26

15th Management Course,
State University of Iowa,
Iowa City, Iowa

June 23-25

Caster & Floor Truck Mfgs. Asso.
Meeting, Hyannis, Mass.

July 13-15

Plant Maintenance Show & Conference,
Pan Pacific Auditorium,
Los Angeles, California

August 17-19

5th Western Packaging & Material Handling Exposition,
San Francisco, California

September 27-30

9th Annual Industrial Packaging & Material Handling Exposition,
Competition & Short Course,
Coliseum,
Chicago, Illinois

October 16-19

Conveyor Equipment Mfgs. Asso.
Meeting,
Greenbrier Hotel,
White Sulphur Springs, W. Va.

October 18-22

42nd National Safety Congress & Exposition,
Chicago, Illinois

October 21-22

Caster & Floor Truck Mfgs. Asso.
Meeting,
Cleveland, Ohio

November 9-11

3rd Canadian National Packaging Exposition,
CNE Automotive Building,
Toronto, Canada

November 15-17

10th Annual Meeting,
The Magnesium Association,
Hotel Chase,
St. Louis, Missouri

Here's Why The **MICHIGAN** Tractor Shovel WILL DO MORE WORK FOR YOU!



* *This Power Train — from engine to tires — engineered and manufactured by Clark*

* **CLARK TORQUE CONVERTER** — 3-to-1 multiplication factor provides maximum torque *when it is needed*. Precise control in inching and digging.

* **CLARK POWER-SHIFT TRANSMISSION** — no conventional clutch; four speeds forward and reverse—direction control by lever on the steering column.

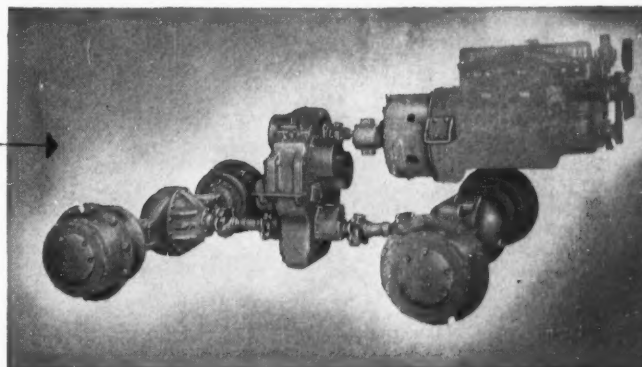
* **CLARK PLANETARY DRIVE AXLE** — final reduction in the wheel reduces the torque load on all gears and shafts.

RESULT — easier operation, utmost accessibility and simplicity of servicing, highest efficiency in shovel handling.

ADD greater weight and more horsepower than any front-end loaders of comparable capacity, and you see why you can Move More with a MICHIGAN*.

*A Trademark of Clark Equipment Company

Circle No. 36 on Reader Service Card for more information



For full information send for the MICHIGAN Tractor Shovel Fact-Folio — specifications, action photos, magazine article. The coupon will bring your copy.

**CLARK
EQUIPMENT**



CLARK EQUIPMENT COMPANY, Construction Machinery Division
440 Second Street, Benton Harbor, Michigan, U. S. A.

Please send the MICHIGAN Tractor-Shovel Fact-Folio

Name _____ Title _____

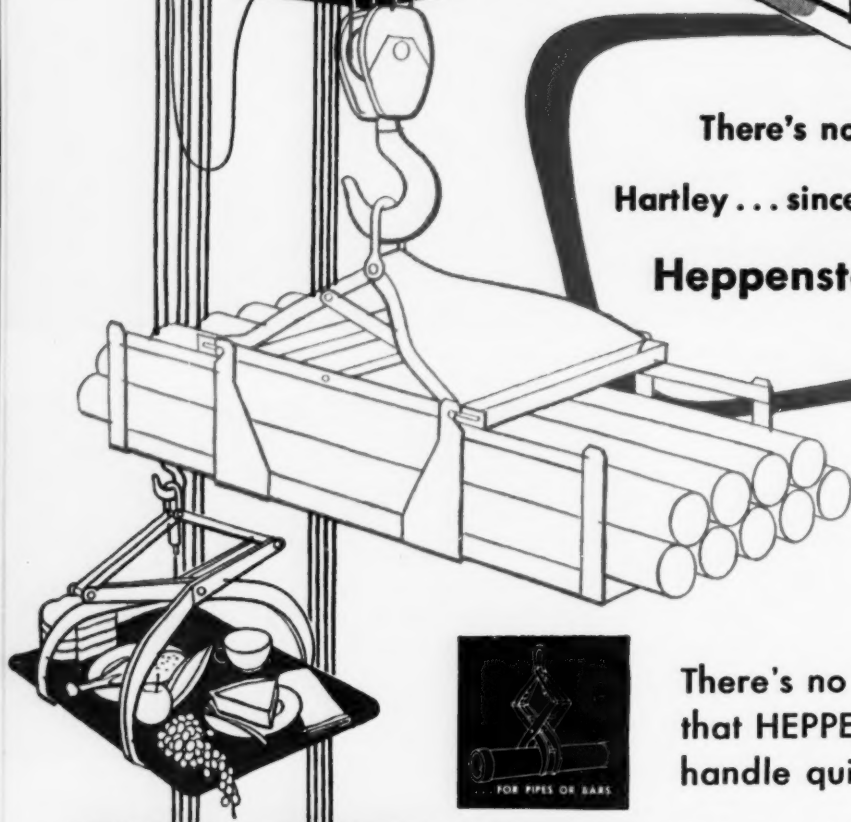
Firm Name _____

Address _____

City _____ Zone _____ State _____

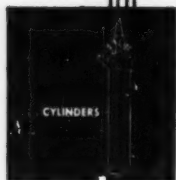


There's no stopping
Hartley . . . since he discovered
Heppenstall Tongs



There's no limit to the range of jobs
that **HEPPENSTALL SAFE-T-TONGS**
handle quickly, safely, economically

Whatever your handling job requires—regardless of shapes, weights, or sizes—a Heppenstall Safe-T-Tong engineered specifically to your needs will help you speed materials handling operations with greater efficiency and safety. Call Heppenstall now. Obtain complete information and technical assistance. Heppenstall Company, Pittsburgh 1, Pa. Sales offices in principal cities.



CYLINDERS



BARRELS



FOR PIPES OR BARS



SACKS

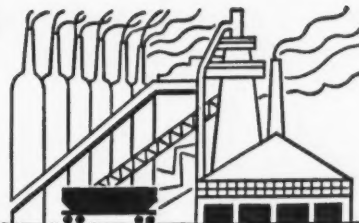


Heppenstall

... TONGS FOR EVERY LIFTING PROBLEM

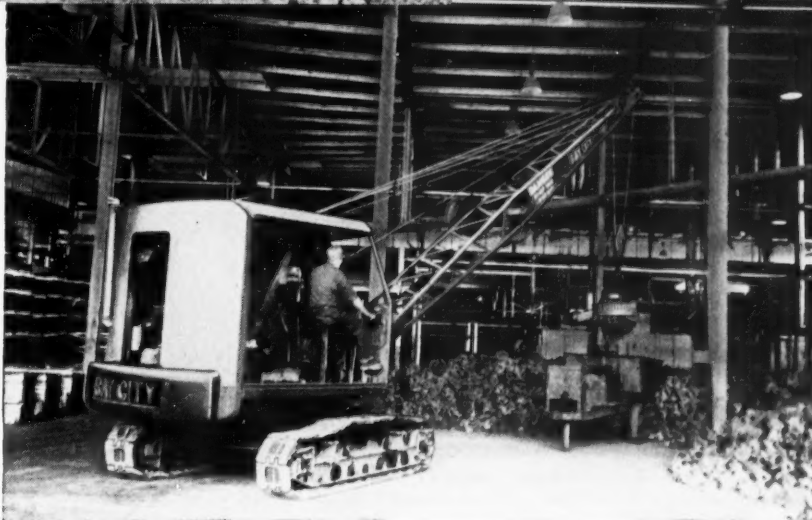
Circle No. 72 on Reader Service Card for more information

TOO HOT TO HANDLE? NOT FOR A BAY CITY!



BAY CITY Shovels and Cranes handle hot materials with the same dependability, the same speed and precision that is typical of their performance on any job. Yes, whatever the task these powerful, heavy duty machines are built for high daily output and long service. Engineered for accurate balance, easy operation and low cost maintenance, the BAY CITY will help increase production and cut costs in your operations.

Above: $\frac{3}{4}$ -yard BAY CITY Shovel is loading hot slag in an Eastern steel mill. **Right:** $\frac{1}{2}$ -yard BAY CITY Crane with 29" magnet is handling hot castings at one of the world's largest malleable iron foundries.



Write for these catalogs describing BAY CITY Crawlers of $\frac{1}{2}$ yards and up, BAY CITY CraneMobiles and CraneWagons up to 25 ton capacities.

BAY CITY

BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

FLOW • JUNE, 1954

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236

SIMPLICITY AND INGENUITY have made

American STORAGE RACKS

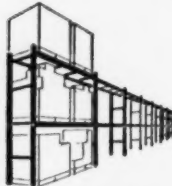


First Choice
YEAR AFTER YEAR

**AN EXCLUSIVE
AMERICAN FEATURE**



Adjustable Pallet Racks



Standard Pallet Racks



Skid Racks



Drum & Barrel Racks



Tool & Die Racks



Coil Racks & Tiering Racks

American Tubular Storage Racks are designed to meet practically every storage need. They are used in every type of business, large and small. Get the facts on American Racks before you decide on any type rack. Send for catalogue.

Send for Catalogue!



American Pallet Rack Installation
S. S. Kresge Co. Warehouse, Fort Wayne, Indiana

AMERICAN METAL PRODUCTS CO.



STORAGE RACK DIVISION

5959 Linsdale • Detroit 4, Michigan

Circle No. 159 on Reader Service Card for more information

**association
and society
NEWS**

• Don W. Kelsey of the Don W. Kelsey Company, Detroit, will represent the American Society of Mechanical Engineers at the Mechanical Handling Exhibition and Convention in London, England, in June. Kelsey will be the only American member



D. W. Kelsey

of a panel discussing the subject, "In Search of Better Handling". The remaining members will be British material handling experts, under the leadership of W. J. Brown, former Independent Member of Parliament for Rugby. Kelsey is well known in the Detroit area, having been one of the pioneers in the material handling field. He is former chairman of the Material Handling Section of the Detroit A.S.M.E., and is currently a member of the Executive Committee of the Detroit Section. He is also a member of the material handling committee of the National Security Industrial Association.

• The Material Handling Institute and the American Material Handling Society are jointly sponsoring a College-Industry Committee on material handling education. The committee has eight objectives, and acts as a central source and authority on sound, authentic information on material handling education. The latest release by the committee is a booklet outlining objectives,

L-S

facts about fork trucks



The new Lewis-Shepard SpaceMaster Model "M" with full length safety guard operates in 6-foot aisles.

Safest end-control truck ever made!

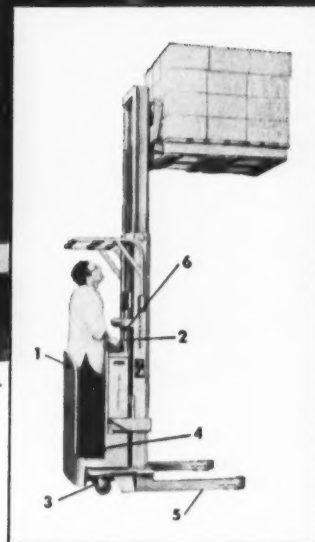
The all-new L-S SpaceMaster Model "M" with wrap-around compartment of reinforced steel, shields driver against collisions . . . eliminates a major hazard of narrow aisle truck operation.

New dual caster wheels and tandem load wheels provide support at all corners . . . assure maximum stability for very high stacking . . . 9-point support improves load distribution, minimizes wear and tear on floors.

And, in addition to its many *new* features, you get famous Model "M" 6-foot aisle operation, exclusive "Lubricated-for-Life" Design, exclusive Articulated Linkage, and many other Lewis-Shepard quality features.

DON'T WAIT — WRITE TODAY for literature and data on the new SpaceMaster Model "M".

Circle No. 83 on Reader Service Card for more information



New features of L-S

Model "M" include: (1) Wrap-around compartment to protect operator; (2) 3 speed control for smoother operation; (3) Dual casters minimize floor damage; (4) Electric foot brake is easy to operate, extra-safe; (5) 2" underclearance provides greater grade clearance on straddle model; (6) Larger handwheel for easier steering.



The "MASTER" Line

LEWIS-SHEPARD

54-6 Walnut Street, Watertown 72, Mass.

Please send circular 35-A on NEW Model "M"

Name _____ Title _____

Company _____

Address _____

City _____ State _____

MAKE THIS SIMPLE TEST!



From chest height, drop a regular tennis ball onto a cement floor or driveway. You, naturally, will find that, like Buffalo Belts, the tennis ball has the "built-in bounce" to ignore the IMPACT with the pavement.



Now, drop a billiard ball in the same manner and you'll observe that there is no bounce and the ball is very likely chipped or cracked. A simple but graphic illustration of the difference between "bouncy" Buffalo Belts and other belts of stiff, rigid materials.

... and you'll know why it's smart to buy **BUFFALO Conveyor BELTS**



OVER
200 SIZES
35 WIDTHS
7 THICKNESSES

MADE OF SOLID WOVEN COTTON by our exclusive Wov-In-Wear process, Buffalo Belts are tougher, longer lasting. They have a unique "built-in bounce" that *resists* the impacts of every day abrasive wear. The resiliency of the woven cotton, like the tennis ball above, is engineered into the belt to make it resist impact and conform effortlessly to your conveyor. You'll find that Buffalo Belts' lighter weight causes less strain on motors, that they are clean, odorless and adaptable to most *any* conveying job. When you find out that, in spite of their long life, Buffalo Belts can successfully replace costlier, heavier, plied-up belts for a FRACTION of the cost ... you'll become a regular Buffalo fan. Get the facts!

IN ADDITION TO REGULAR WOVEN BELT, BUFFALO OFFERS 6 SPECIAL TREATMENTS TO HANDLE PARTICULAR PROBLEMS, FOR INSTANCE:

DEEP FREEZE

Buffalo's solid woven cotton conveyor belt, without any type of coating or treatment, can withstand temperatures from 20 to 40 degrees below zero.

FREE
14 PAGE GUIDE TO
Buying the Right Conveyor Belt for
your Particular Job. Illustrated Uses, Maintenance Tips, Sizes, Prices.



BUFFALO WEAVING & BELTING COMPANY

209 CHANDLER STREET BUFFALO 7, NEW YORK
NEW YORK PHILADELPHIA CHICAGO DETROIT LOS ANGELES

Circle No. 28 on Reader Service Card for more information

ASSOCIATIONS

Continued

activities, membership and method of operation. The booklet may be obtained without charge from Irving Footlik, Secretary, College-Industry Committee on Material Handling Education, 8444 South Yates Avenue, Chicago 17, Ill.

● The Wirebound Box Manufacturer's Association's statistical review for the year, which was presented at the association's meeting at Belleair, Florida, revealed that the industry's dollar volume for 1953 was \$111,260,363 and its unit



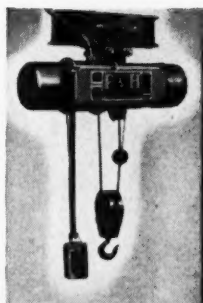
N. A. Fowler

production was 186,367,262 wirebound boxes and crates. The dollar volume was 3.3 percent over that of 1952 and the unit volume was 6.6 percent greater than the previous year. The statistical review was presented by L. S. Beale, secretary of the association. Neil A. Fowler, vice president of the General Box Co., Des Plaines, Ill., was elected president by the directors to succeed J. A. Sowell of the T. R. Miller Mill Co., Brewton, Ala., who had served two terms. Sowell was elected vice president.

● New officers for the year 1954-55 were elected by the Cleveland chapter of the A.M.H.S. at its April 22 meeting. They are: A. B. Glossbrenner, president; Martin Ganzer, J. G. Schlichter, Walter McCann and William Gates, board members. The meeting was preceded by the usual social hour and dinner. Guest speaker for the evening was Herbert E. Markley, secretary of the Timken Roller Bearing Company, who spoke on industrial radio.

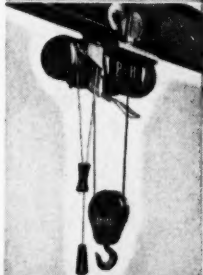
P&H Zip-Lift Electric Hoist (Pushbutton control)

Handy little power-house for loads from 250 pounds up to one ton. Versatile—in use in metal shops, dairies, hospitals, bakeries. Solves your load-handling problem within the weight limits specified. Plenty of literature available for more detailed information. Ask for it.



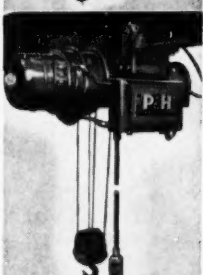
P&H Zip-Lift Electric Hoist (Rope Control)

You can do anything with this model that you can with the Pushbutton Control Zip-Lift. The less expensive rope control gives you a break on price—doesn't cut down the number of jobs you can perform. You get years of trouble-free service at an extremely reasonable initial cash outlay.



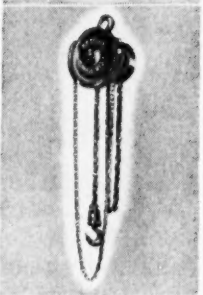
P&H Hevi-Lift

For heavy loads—and your own particular problem. The Hevi-Lift is a custom-built hoist—manufactured to your specifications. Over 3,000,000 variations possible on this husky load-handler. You're sure to find the right combination for you. Take a look at the literature available—then see your P&H distributor.



P&H Hand Chain Hoists

Perhaps, you're in the market for a hand chain hoist; rather than wire-rope. If you are, you'll have to look far to find a better value than these P&H work-horses. Handle up to 25 tons easy as pie. Spur-gear; Timken or roller bearing trolleys; Army-Type trolleys—whatever you need. Ask for literature on the complete line.



P&H Jib Cranes

Hang your hoist on a P&H Jib Crane—then you've got a dependable one-two combination working for you. Eight different models—bracket-type, mast-type and pillar-type. Capacities up to 12,000 pounds. Use the coupon for fast return of literature on the complete P&H Line.



Here's one way a **P&H** Hoist can save \$10,000 a year for your business!

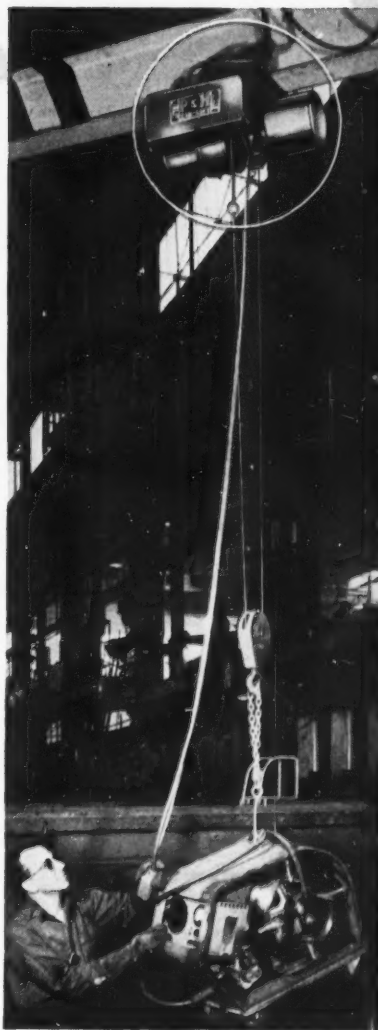
THERE'S more than one way, of course. But here's one—signed, sealed, and delivered—from the experience of the Falk Corporation in Milwaukee.

Back in 1946, Falk engineers installed a P&H Zip-Lift in Foundry No. 1. They hung it on an overhead trolley, used it for the automatic return of wooden patterns coming out of the roll-over machine after the sand molds had been made. Workmen like the way it speeds operations, call it the "merry-go-round."

Up until the time this set-up was installed, it took four men to move one of these patterns, that weigh between 400 and 500 pounds. Today—one man, using a Pushbutton Control Zip-Lift, moves one pattern 30 feet in 30 seconds.

We won't give you all the details here, but Falk accountants have the savings on this operation pegged at more than \$10,400 per year... about 8¢ per minute. Operating cost to effect this savings... slightly over 1¢ per minute!

You can have the complete story on the savings involved in this, and other operations in the Falk plant. Just use the coupon below to ask for it. No charge, of course.



Tear out and mail today

P&H HOISTS

HARNISCHFEGER CORPORATION

4643 W. National Ave. • Milwaukee 46, Wis.

P&H Hoists

HARNISCHFEGER CORPORATION

4643 West National Ave., Milwaukee 46, Wisconsin

Gentlemen: Please send me the detailed report on how the Falk Corporation uses P&H Hoists. I'm also interested in more information on ☐ P&H Zip-Lift, Pushbutton Control, ☐ P&H Zip-Lift, Rope Control, ☐ P&H Hevi-Lift, ☐ P&H Hand Chain Hoists, ☐ P&H Jib Cranes.

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

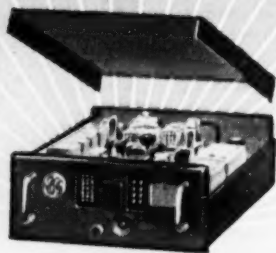
3836

Circle No. 160 on Reader Service Card for more information

A GREAT 450 MC UNIT

"Guarantee"

**G-E 2-WAY RADIO...YEARS AHEAD
WITH SELECTIVITY
GUARANTEED FOR LIFE!**



SELECTIVITY GUARANTEED FOR LIFE!

✓ **SELECTIVITY GUARANTEED FOR LIFE...**

New multi-coil IF transformers. Compare G-E specs *with any other!*

✓ **RESERVE POWER** at the station—40 watts

output on all station equipment—continuous duty rating.

✓ **FULL 6/12 VOLT OPERATION.** Mobile

unit functions from 6 or 12 volt source.

✓ **HIGH-Q CAVITIES** at *both* receiver input

and transmitter output—your best insurance against TV interference.

✓ **4-CHANNEL OPERATION** . . . Here's

positive assurance of performance on different frequencies!

✓ **290 KC LOW IF**—the right IF for mobile

radio equipment!

SPARKS G.E.'s NEW

Policy"



TODAY, as always, General Electric stamps its products with a quality brand. Here is not just another piece of mobile radio gear to satisfy consumer need... here is a standard of performance for the industry to follow. IF tuning... guaranteed for life! Your interests deserve nothing less than the criteria G.E. has

established for mobile radio performance.

Examine every feature of this outstanding 450 MC equipment. Compare *power... reliability... maintenance requirements...* because the story of G-E's superior design is right there for all to see... for all to take advantage of. Get the G-E 2-way radio story today!

NOW! Get this guarantee policy when you purchase any new G-E 2-way radio... regardless of type!

Get full information from your local G-E district representative or write direct to:
General Electric Company, Section X3264,
Electronics Park, Syracuse, New York.



You can put your confidence in—

GENERAL ELECTRIC

Circle No. 61 On Reader Service Card for more information

NEWS VIEWS TRENDS

BARRETT-CRAVENS CONSOLIDATES PLANTS

The completely modern new plant of the Barrett-Cravens Company, Northbrook, Illinois, is now in operation. In this Chicago suburb, the activities of two Chicago plants and the company's Crescent Truck Division, previously located at Lebanon, Pa., have been consolidated. Manufacturing operations not included in the Northbrook plant are those of the company's plant at Hillside, New Jersey, which will produce products for the Eastern area, where freight differentials might become a factor. Company officials are: A. M. Barrett, Sr., chairman of the board; A. M. Barrett, Jr., president; O. M. Lund, vice president and general sales manager; H. L. Newell, general manager; and W. B. Rea, sales manager.

FLOW TO OCCUPY BOOTH Q-11 AT BRITISH EXHIBITION

FLOW will be prominently represented at Britain's Fourth Mechanical Handling Exhibition and Convention, which is scheduled for June 9-19 in Olympia, London. FLOW will occupy Booth Q-11, located on the first floor of Olympia's National Hall. On hand to welcome visitors, furnish tickets and assist in any way possible, will be the London FLOW staff, headed by John A. Lankester. Also present will be FLOW's publisher and president, Irving B. Hexter, who will fly to London for the event.

G.E. DEDICATES \$25,000,000 PLANT

The General Electric Company dedicated its new \$25,000,000 medium transformer plant on May 11. Located in Rome, Georgia, the plant was the first to be constructed for the mass production of power transformers. General Electric president Ralph Cordiner was present for the dedication. Host for the occasion was David B. Lawton, plant manager.

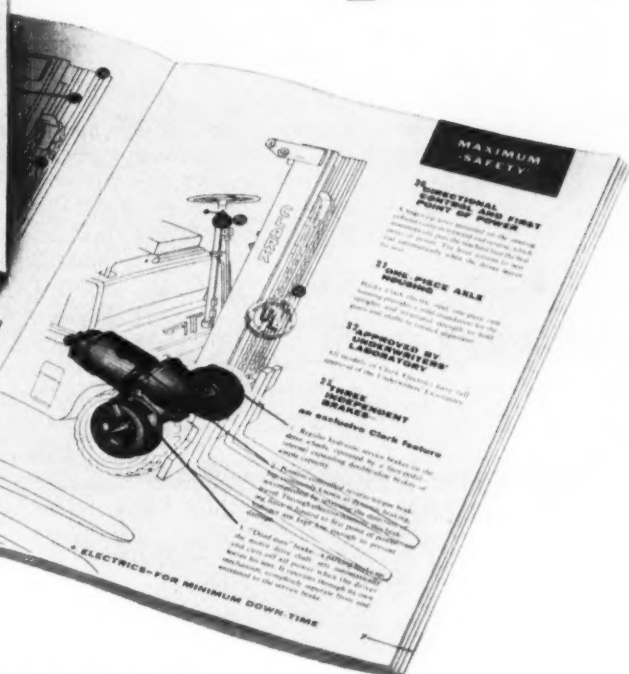
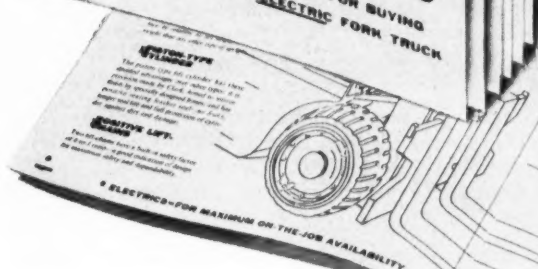
27 ACRES FOR ELECTRIC CONTROLLER

A 27 acre site has been selected for the new plant and office buildings of The Electric Controller & Manufacturing Company of Cleveland. R. G. Widdows, board chairman, says that present plant capacity has been repeatedly overtaxed in recent years. While the company's present business reflects the general downward trend, the management considers the time opportune for new construction in anticipation of future requirements. Completion of the facilities is scheduled for the spring of 1955.

SIPMHE COMPETITION DRAWS 300 ENTRIES

Approximately 300 entries are expected in the 1954 National Protective Packaging and Materials Handling Competition to be held at the Chicago Coliseum, September 28-30. The event is being held in conjunction with the 9th National Industrial Packaging and Materials Handling Exposition and the Annual Technical Short Course. This year it is being co-sponsored by the Society of Industrial Packaging and Materials Handling Engineers and the University of Illinois. The competition is restricted to users of packaging and materials handling equipment and supplies, and is divided into seven distinct groups, according to types of containers and material handling techniques.

?



which shows and explains in detail the features of the Clark line of electric-powered lift trucks. The Electri-Facts Booklet disassembles the Clark electric truck to give you a mechanic's-eye view of all working parts—electrical control system, hydraulic system, power train, uprights, brakes, etc. Find out why Clark electrics give you better battery efficiency, why they operate a longer work-cycle than any other electric truck. Before you buy an electric truck, or any lift truck, you owe it to yourself to have the facts on Clark electrics. Use the coupon—send for your copy of ELECTRI-FACTS.

☐ Send ELECTRI-FACTS

Name	Firm
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Address _____ City _____ Zone _____ State _____

Circle No. 35 on Reader Service Card for more information

NEW TYPE SEMINAR FOR WESTERN EXPO

A new type of industrial seminar will be introduced concurrently with the Fifth Western Packaging and Materials Handling Exposition in San Francisco's Civic Auditorium, August 17-19. Moderator for the seminar will be Professor Samuel Rubin, head of the University of Southern California's Transportation Department. In closed sessions, top industry officials will consider the long range development of administrative and engineering methods, and the problems of both large and small manufacturers. Findings and recommendations of the experts will ultimately be directed to the specific industries involved, for application or further research.

BOND ASSURED FOR CATERPILLAR

Gail E. Spain, vice president of Caterpillar Tractor Company, announces the promotion of a "Bonded Buy" campaign slanted toward prospective purchasers of used equipment. The bond assures the customer that if the dealer should fail to fulfill his guarantee of 30 days against defective parts, the surety company will make good on any legitimate claim.

ELECTROLIFT MOVES

Electrolift, Inc. has combined its sales, engineering and manufacturing facilities in a new and expanded plant located at 204 Sargeant Avenue, Clifton, New Jersey.

INDUSTRY MEETS AT SOUTHERN CAL.

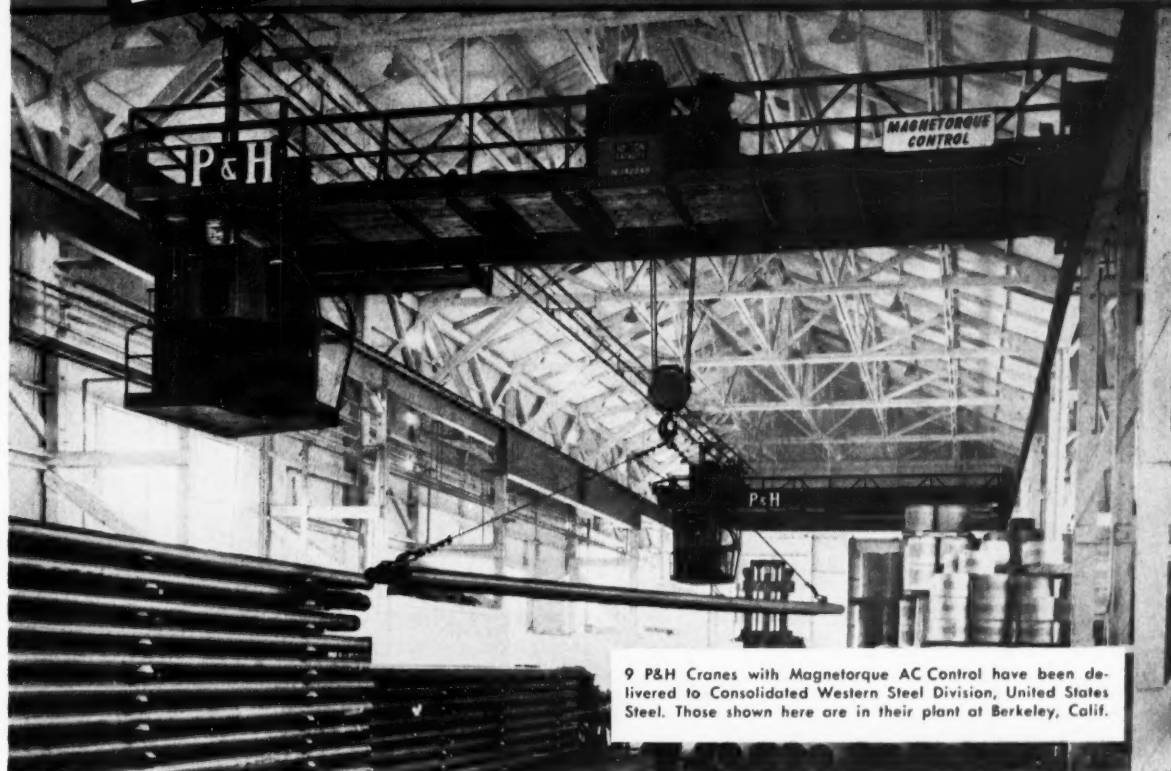
The University of Southern California will be headquarters for the third biennial Packaging and Materials Handling Institute, June 8-9. A packaging session will be held June 8, with speeches by authorities on commercial and specification packaging. The June 9 session will be devoted to material handling. There will be panel discussions both days. Subjects covered will be (1) how to analyze a handling problem and select the proper equipment (2) handling between vendor and purchaser and between plants of one company (3) in-process handling (4) maintenance of handling equipment.

MAINTENANCE HIGHLIGHTED

Solutions to maintenance problems peculiar to Pacific states industrial operations will be emphasized in an engineer-management conference to be held concurrently with the Western Plant Maintenance Show, July 13 through 15, at Los Angeles Pan Pacific Auditorium. Featured at the opening general session will be top industrial experts discussing maintenance organization, management, planning, scheduling and training personnel. L. C. Morrow is general chairman of the national meeting.

PACKAGING MEN MEET AT FALLS

Nearly 400 Canadian and U. S. packaging and production authorities met at Niagara Falls, Ontario, on May 27 to study in detail the newest trends and developments in packaging machinery. The event was the third annual Ontario Regional Conference of Packaging Association of Canada. The theme of the program covered the economics of packaging, from design and engineering through packaging machinery to handling and shipping. Plant tours and panel discussions highlighted the meeting.

P&H**OVERHEAD CRANES****At Consolidated Western Steel...**
IT'S **P&H MAGNETORQUE®**
for Proved Performance!

You take no chances when you choose P&H Overhead Cranes with Magnetorque AC Control! Here's the *proved* performance that gives you excellent speed control, greater dependability, and complete freedom from load brake worries.

Seventy years of leadership — that's

why so many of America's leading industrial concerns have bought and re-bought P&H Cranes. And now, this great P&H development gives you the finest known speed-load characteristics in overhead crane service — with all the convenience and economy of a.c. power.

P&H OVERHEAD CRANE DIVISION**HARNISCHFEGER CORPORATION**

MILWAUKEE 46, WISCONSIN

P&H

Complete facts are
yours for the
asking. Write for
your copy of
Bulletin C6-3.



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COMPARE MOTO-TRUC

for...

★ MANEUVERABILITY

★ TRULY FUNCTIONAL DESIGN

★ EASE OF OPERATION

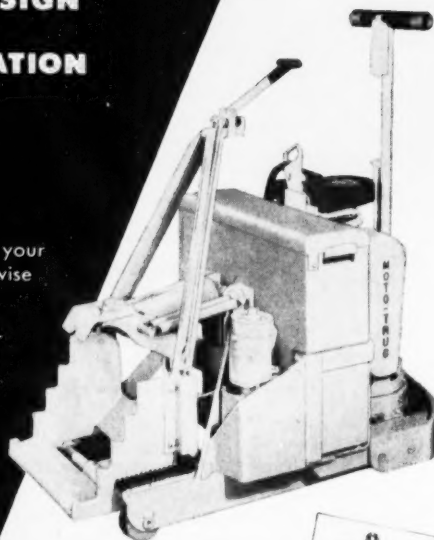
★ EASE OF MAINTENANCE

★ PRICE

Only through diligent comparison can your choice of materials handling trucks be a wise and economical one.

Design features that are tomorrow's standards are incorporated in MOTO-TRUCS today... these features are often copied... yet never equalled.

Investigate the complete MOTO-TRUC line of Walkies... and remember... There's a MOTO-TRUC for every purpose.



Send for
Bulletin #54



Representatives in Principal Cities

The MOTO-TRUC Co.

1955 EAST 59th STREET • CLEVELAND 3, OHIO

Pallet... Platform... Hi-Lift Trucks

LARGEST EXCLUSIVE MANUFACTURER OF "WALKIES"

Circle No. 101 on Reader Service Card for more information

FLOW • JUNE, 1954



This ad tells you how to
SAVE MONEY in your
stockroom

© GF Co. 1954

Here's how to store "non-productive" stock

*The GF Control System, using **GF STEEL SHELVING, RACKS AND BINS**, reduces handling; cuts inventories; saves time, money*

YOUR STOCKROOM should be as carefully controlled as your cash box! If you can't lay your hands on maintenance and "housekeeping" supplies without long search and extra steps...or if they run out through lack of proper inventory control...it costs you time and money!

PERFECT CONTROL IS SIMPLE. We have prepared a booklet (free if you write for it on your company letterhead) titled: "Non-Productive Stock — Its Storage and Handling". In it is a scientific control system that will save you important dollars where you'd least expect to find them.

DESIGNED FOR ECONOMICAL EFFICIENCY. GF steel shelving, bins, racks and cabinets

are expressly designed for systematic storage of all maintenance and replacement items for plant, factory or office. GF steel units can be combined as you wish, moved as you wish.

MADE STRONG TO LAST LONG. Made of toughest steel, GF shelving gives you more strength with less bulk. Cannot warp, split or rot...and it lasts so long it pays for its low initial cost many times over.

WE REPEAT... send for our FREE booklet, "Non-Productive Stock — Its Storage and Handling". No obligation on your part. Address: The General Fireproofing Company, Dept. F-31, Youngstown 1, Ohio.



MODE-MAKER DESKS • GOODFORM
ALUMINUM CHAIRS • SUPER-FILER
MECHANIZED FILING EQUIPMENT •
GF ADJUSTABLE STEEL SHELVING

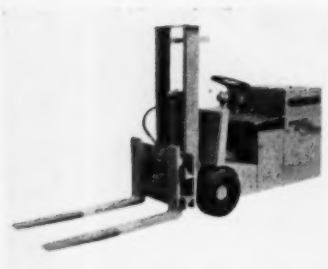
Good metal business furniture is a good investment

Circle No. 62 on Reader Service Card for more information



in Equipment

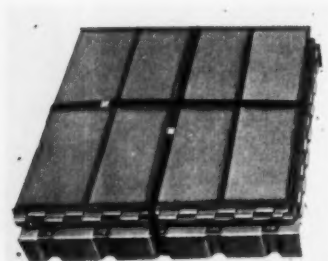
Summaries of latest information from manufacturers. For more details, use the free-mailing Reader Service Card.



Minimum Headroom for Electric Truck

An electric fork truck which is said to give the operator protection against low overhead clearance objects and at the same time retain the shortest possible overall length and turning radius, has been designed by the Crescent Truck Division of Barrett-Cravens Company. Instead of having the operator seated above the battery compartment, the seat has been moved forward slightly and lowered, thus giving a space of 36 inches from seat to top of mast.

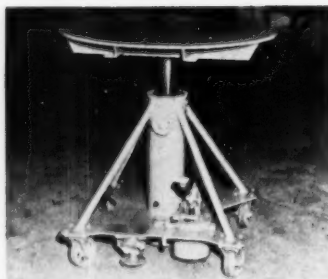
Circle No. 180 on Reader Service Card for more information



Collapsible Container Lowers Costs

An intensive research and developmental effort by engineers of Republic Steel Corporation has resulted in the production of a lightweight, collapsible steel box and skid unit for shipping. Termed the "Collaps-a-tainer", features pointed out by the manufacturer are: lightweight—approximately 100 pounds; rigidity and strength—constructed of 18 gage steel with 16 gage reinforcements; ease of assembly—hinged construction; reduction of fire hazard; compactness; durability; collapsability; and lower handling costs.

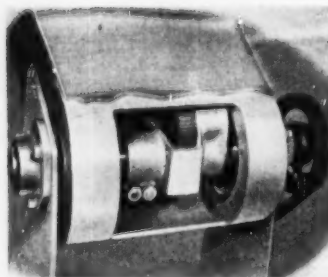
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Revolving Top Elevating Table

Engineers of The Raymond Corporation solved the problem of providing an adjustable table that could be turned and elevated to serve several conveyor lines. They developed an elevating table with a revolving top, which may be locked in a single position, if desired. A height range of 16 inches is provided. Capacity is 2000 pounds. The table is portable, but can be held in position by a floor lock. Hydraulic elevation and lowering is controlled by convenient foot pedals on the pump, which is mounted on the base of the table.

Circle No. 182 on Reader Service Card for more information



Conveyor Pulley Gear Reduction Unit

The Concentro-Drive Co., Inc. announces the production of a highly engineered and accurately manufactured gear reduction unit which operates inside a conveyor pulley. The input shaft is concentric with the pulley and drives thru the dead shaft. Made in double and triple reduction units, the drives are used for all types of belt conveyors, and are said to reduce the cost of the finished conveyor by saving material and labor. Unnecessary chain drives and guards and high torque drives outside the pulley are eliminated.

Circle No. 183 on Reader Service Card for more information

1953 LUMBER PRODUCTION

of Major Western Mills

Reprint from THE TIMBERMAN, March '54

MEMO

Top western lumber producers for 1953 count on Gerlinger Material Carriers or Fork Lift Trucks... or both, to help boost output and to lower costs in their 102 mills

CHECK-COMPARE! GERLINGER

Job-proved equipment meets every test as more and more enthusiastic owners discover every year.

100 MILLION FEET AND OVER

✓ Alaska Pine & Cellulose Ltd., Vancouver, B.C. (3 mills)	309,862,000
✓ Potlatch Forest, Inc., Lewiston, Ida. (3 mills)	269,338,000
✓ The Long-Bell Lumber Co., Longview, Wash. (2 mills)	262,587,039
✓ British Columbia Forest Products Ltd., Vancouver, B.C. (4 mills)	259,900,000
✓ Weyerhaeuser Timber Co., Longview, Wash. (3 mills) (Estimated)	240,000,000
✓ Weyerhaeuser Timber Co., Everett, Wash. (2 mills) (Estimated)	230,000,000
✓ Coos Bay Lumber Co., Coos Bay, Ore. (3 mills)	191,102,127
✓ Fruit Growers Supply Co., Westwood, Calif. (3 mills) (Estimated)	174,000,000
✓ Canadian Western Lumber Co., Ltd., New Westminster, B.C.	164,810,076
✓ MacMillan & Bloedel Ltd., Canadian White Pine Div., Vancouver, B.C.	154,064,000
✓ Canadian Forest Products Ltd., Eburne Sawmills Div., Vancouver, B.C.	144,704,436
✓ Weyerhaeuser Timber Co., North Bend, Ore. (Estimated)	140,000,000
✓ MacMillan & Bloedel Ltd., Chemainus Div., Chemainus, B.C.	131,008,000
✓ MacMillan & Bloedel Ltd., Alberni Pacific Div., Port Alberni, B.C.	124,063,000
✓ Irwin-Lyons Lumber Co., North Bend, Ore.	123,000,000
✓ Edward Hines Lumber Co., Ponderosa Pine Div., Hines, Ore.	121,249,000
✓ Pope & Talbot, Inc., St. Helens, Ore.	120,177,690
✓ MacMillan & Bloedel Ltd., Somass Div., Port Alberni, B.C.	119,605,000
✓ The Diamond Match Co., Spokane, Wash. (5 mills)	112,000,000
✓ C. D. Johnson Lumber Co., Div. of Georgia-Pacific Plywood Co., Toledo, Ore.	111,945,000
✓ The McCloud River Lumber Co., McCloud, Calif.	110,179,000
✓ Weyerhaeuser Timber Co., Springfield, Ore. (Estimated)	107,000,000
✓ The Pacific Lumber Co., Scotia, Calif. (2 mills)	106,079,000
✓ Southwest Lumber Mills, Inc., Phoenix, Ariz. (3 mills)	104,872,000
✓ Santiam Lumber Co., Sweet Home, Ore. (2 mills)	104,125,000
✓ Roseburg Lumber Co., Roseburg, Ore.	103,309,000

99-75 MILLION FEET

✓ J. Neils Lumber Co., Libby, Mont. (2 mills)	99,463,000
✓ Anaconda Copper Mining Co., Lumber Dept., Bonner, Mont.	95,192,748
✓ Weyerhaeuser Timber Co., Klamath Falls, Ore. (Estimated)	90,000,000
✓ Weyerhaeuser Timber Co., Seaside, Wash. (Estimated)	85,000,000
✓ Simpson Logging Co., Seaside, Wash. (2 mills)	80,000,000
✓ Hammond Lumber Co., Seaside, Wash. (2 mills)	75,000,000
✓ Brooks-Scanlon, Inc., Seaside, Wash. (2 mills)	70,000,000
✓ Weyerhaeuser Timber Co., Seaside, Wash. (2 mills)	65,000,000
✓ Tahsis Company, Tahsis, B.C. (2 mills)	60,000,000
✓ The Diamond Match Co., Portland, Ore. (2 mills)	55,000,000
✓ Union Lumber Co., Portland, Ore. (2 mills)	50,000,000
✓ Powell River Company, Powell River, B.C. (2 mills)	45,000,000
✓ British Columbia Forest Products Ltd., Vancouver, B.C. (2 mills)	40,000,000
✓ West Coast Lumber Co., Vancouver, B.C. (2 mills)	35,000,000
✓ Oceanside Lumber Co., Oceanside, Calif. (2 mills)	30,000,000
✓ Pope & Talbot, Inc., Oakridge, Ore.	29,882,000
✓ Medford Corporation, Medford, Ore.	29,333,158
✓ Boise Payette Lumber Co., Boise, Ida. (4 mills)	28,363,000
	28,150,000

✓ Diamond Lumber Co., Portland, Ore.	77,184,831
✓ Ralph L. Smith Lumber Co., Anderson, Calif. (2 mills)	76,718,000
✓ The Long-Bell Lumber Co., Vernonia Div., Vernonia, Ore.	76,624,000
✓ Willamette Valley Lumber Co., Dallas, Ore.	76,577,000
✓ The Booth-Kelly Lumber Co., Springfield, Ore. (2 mills)	76,347,416
✓ Pickering Lumber Corp., Standard, Calif.	75,000,000

74-50 MILLION FEET

✓ The Ohio Match Co., Coeur d'Alene, Ida.	69,500,000
✓ Willamette National Lumber Co., Foster, Ore.	65,304,000
✓ St. Paul & Tacoma Lumber Co., Tacoma, Wash.	65,204,000
✓ Van Fleet Lumber Co., Rainier, Ore.	65,141,000
✓ Weyerhaeuser Timber Co., Raymond, Wash. (Estimated)	65,000,000
✓ Ross Lumber Co., Medford, Ore. (2 mills)	64,000,000
✓ Coos Head Timber Co., Coos Bay, Ore. (2 mills)	63,750,000
✓ Schafer Bros., Lumber & Shingle Co., Aberdeen, Wash.	63,635,000
✓ Edward Hines Lumber Co., Westfir, Ore.	62,904,270
✓ Cascade Lumber Co., Yakima, Wash.	61,000,000
✓ Shepard & Morse Lumber Co., Westport Div., Westport, Ore.	60,706,090
✓ Glenco Forest Products, Inc., Sacramento, Calif. (3 mills)	60,000,000
✓ Hillcrest Lumber Co., Ltd., Mesachie Lake, B.C. (2 mills)	59,783,000
✓ The Robert Dollar Co., Glendale, Ore.	59,500,000
✓ Gardiner Lumber Co., Gardiner, Ore. (2 mills)	59,344,000
✓ Hudspeth Pine, Inc., Prineville, Ore. (2 mills)	58,680,000
✓ Pope & Talbot, Inc., Lumber Div., Port Gamble, Wash.	57,977,373
✓ Umpqua Plywood Corp., Myrtle Creek, Ore.	57,400,000
✓ McIntosh Lumber Co., Blue Lake, Calif.	56,369,000
✓ Cape Arago Lumber Co., Empire, Ore. (2 mills)	56,256,061
✓ The Long-Bell Lumber Co., Weed, Calif. (2 mills)	56,000,000
✓ Eureka Redwood Lumber Co., Eureka, Calif.	55,687,000
✓ Inman-Poulsen Lumber Co., Portland, Ore.	55,168,127
✓ Giustina Bros. Lumber Co., Eugene, Ore.	54,470,490
✓ Biles-Coleman Lumber Co., Omak, Wash.	53,824,000
✓ Twin Feather Mills, Inc., Kamiah, Ida. (2 mills)	53,631,000
✓ California Barrel Co., Ltd., Arcata, Calif.	51,802,969
✓ Walton Lumber Co., Everett, Wash.	50,000,000

49-25 MILLION FEET

✓ The Long-Bell Lumber Co., Vaughn Div., Eugene, Ore. (2 mills)	49,488,000
✓ J. Herbert Bate Co., Wallawa, Ore. (2 mills)	49,054,000
✓ L. H. L. Lumber Corp., Carlton, Ore.	49,000,000
✓ Klamath Basin Pine Mills Co., Klamath Falls, Ore.	48,795,742
✓ Cal-Ida Lumber Co., Auburn, Calif.	48,500,000
✓ Seaboard Lumber Co., Seattle, Wash.	47,900,000
✓ Lincoln Lumber Co., Lincoln, Wash.	47,789,000
✓ Valseltz Lumber Co., Valseltz, Ore.	47,473,411
✓ Harbor Plywood Corp., Riddle, Ore.	46,752,000
✓ W. A. Woodard Lumber Co., Cottage Grove, Ore.	46,000,000
✓ Winton Lumber Co., Martell, Calif.	45,000,000
✓ J. Neils Lumber Co., Klickitat, Wash.	45,000,000
✓ West Side Lumber Co., Tilton, Wash.	45,000,000
✓ New Mexico Timber Co., Tilton, Wash.	45,000,000
✓ Pilot Lumber Co., Tilton, Wash.	45,000,000
✓ Bat Lumber Co., Tilton, Wash.	45,000,000
✓ Collins Lumber Co., Tilton, Wash.	45,000,000
✓ Pacific Lumber Co., Tilton, Wash.	45,000,000
✓ Youngs Lumber Co., Tilton, Wash.	45,000,000
✓ Fortuna Lumber Co., Fortuna, Calif. (2 mills)	43,343,999
✓ Gilchrist Timber Co., Gilchrist, Ore.	43,200,000
✓ U. S. Plywood Corp., Mapleton, Ore. (2 mills)	42,987,000
✓ M. B. King Lumber Co., Div. of Fullerton Lumber Co., North Vancouver, B.C.	42,171,000
✓ Columbia-Hudson Lumber Co., Bradwood, B.C.	42,111,000
	42,076,000
	41,507,000

GERLINGER

PRODUCTS

GERLINGER CARRIER CO., DALLAS, OREGON

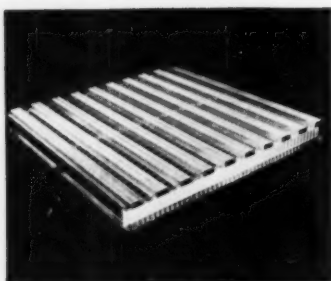
Circle No. 63 on Reader Service Card for more information



Bulk Handling Speeded

A hydraulically-actuated 12 cubic foot tractor shovel, said to speed the one-man handling of bulk materials, has been announced by The Jaeger Machine Company. Specifications of the "Load-Plus" machine are: 1200 pounds capacity; 13.88 mph in reverse, 7.66 mph forward; 6 feet 6 inches turning radius; dumping clearance of 4 feet 6 inches; and long reach of 2 feet 7 inches. The unit has rear wheel steering, constant mesh transmission, and 360 degree visibility. Bucket extends to width of tires, works flush against walls.

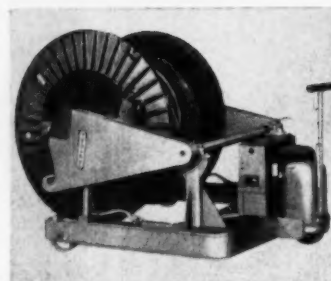
Circle No. 184 on Reader Service Card for more information



Aluminum Pallets Said 75 Percent Lighter

Four basic designs of aluminum pallets are being manufactured by the Louisville Metal Products Company. The "regular", "reversible", "4-way entry" and "roll-in" types offer the user a choice. Fabricated from light weight, high tensile, low crystallization aluminum alloy, the pallets are rivetted and the deck members are knurled to prevent and retard load slippage. Said to be 75 percent lighter than wooden pallets of the same capacity, they are practically maintenance free, as they will not rust, warp or burn.

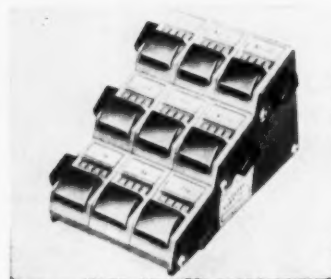
Circle No. 185 on Reader Service Card for more information



Reel Handling Truck

An electric hydraulic lift reel handling truck is announced by The Moto-Truc Company. The unit has a capacity of 1600 lbs. and a maximum lift of 14 inches. Rolls up to 84 inches in diameter can be handled. Travel speed is 2½ to 3 miles per hour, with two speeds forward and reverse. "Dead man" controls are standard, with automotive type brake applied to the drive wheel. The truck is designed for general factory and warehouse use, and can be made to specifications to suit reel needs.

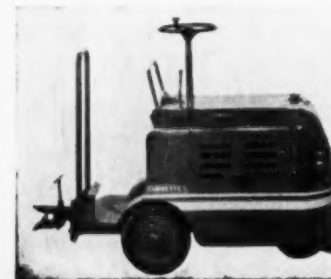
Circle No. 186 on Reader Service Card for more information



Numerical Counter Has Many Uses

A new multiple unit reset counter is announced by Veeder-Root, Inc. Termed the "Vary-Tally", the unit may be used for order, quality, stock and traffic control, as well as sales and laboratory analyses and payroll preparation. Special features include easy readability, no glare, portability and rugged construction. All parts are of corrosion resistant material or finish, and internal parts are of hardened steel. Arranged compactly on stands in tiers up to 6 high and 12 wide, 72 units can be used for numerical break-downs.

Circle No. 187 on Reader Service Card for more information



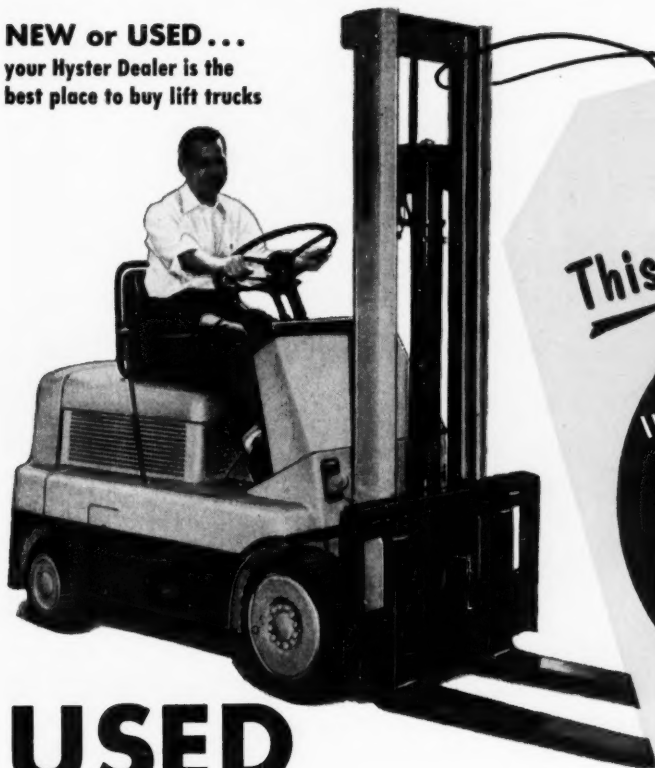
Redesigned Tractor Features Simplicity, Comfort

The "Clarkette 5" line of general utility towing tractors has been redesigned by the Clark Equipment Company. New features incorporated into the unit by the manufacturer are greater driving safety, comfort and simplicity. The driver platform has been lengthened and the brake pedal relocated to provide more room for the operator without affecting the turning radius and the intersecting aisle dimensions. The control lever has been altered to reduce hand fatigue. Drawbar pull remains at 500 pounds.

Circle No. 188 on Reader Service Card for more information

(Continued on page 162)

NEW or USED...
your Hyster Dealer is the
best place to buy lift trucks



USED LIFT TRUCKS

RECONDITIONED BY
FACTORY-TRAINED MECHANICS

This is a

**"HY-
QUALITY"**
Warranted

**USED
LIFT TRUCK**

Another
HYSTER first..

WARRANTED!

ONLY HYSTER DEALERS OFFER "HY-QUALITY" WARRANTED LIFT TRUCKS

"Hy-Quality" Reconditioned Industrial Trucks are backed up by a *written warranty*. "Hy-Quality" Trucks sold by your Hyster Dealer are thoroughly inspected and completely reconditioned in accordance with *factory-specified standards*.

"Hy-Quality" Used Lift Trucks are an economic answer to low-budget purchases, part-time or seasonal operations. Consult your Hyster Dealer on the benefits of a used lift truck for your job. Remember, a used lift truck is only as good as the dealer organization backing it up.

Buy "Hy-Quality" Used Lift Trucks to cut your materials handling costs!

Your Hyster Dealer offers A COMPLETE LINE OF NEW OR USED INDUSTRIAL TRUCKS

- Lift Trucks 1,000 to 18,000 lbs.
- Turret Trucks (Horizontal Transporters)
- Karry Crane — Self-propelled 10,000-lb Crane
- Straddle Trucks 18,000-30,000 lbs.

TERMS and RENTALS

THERE'S PROFIT IN

HYSTER POWER

HYSTER COMPANY

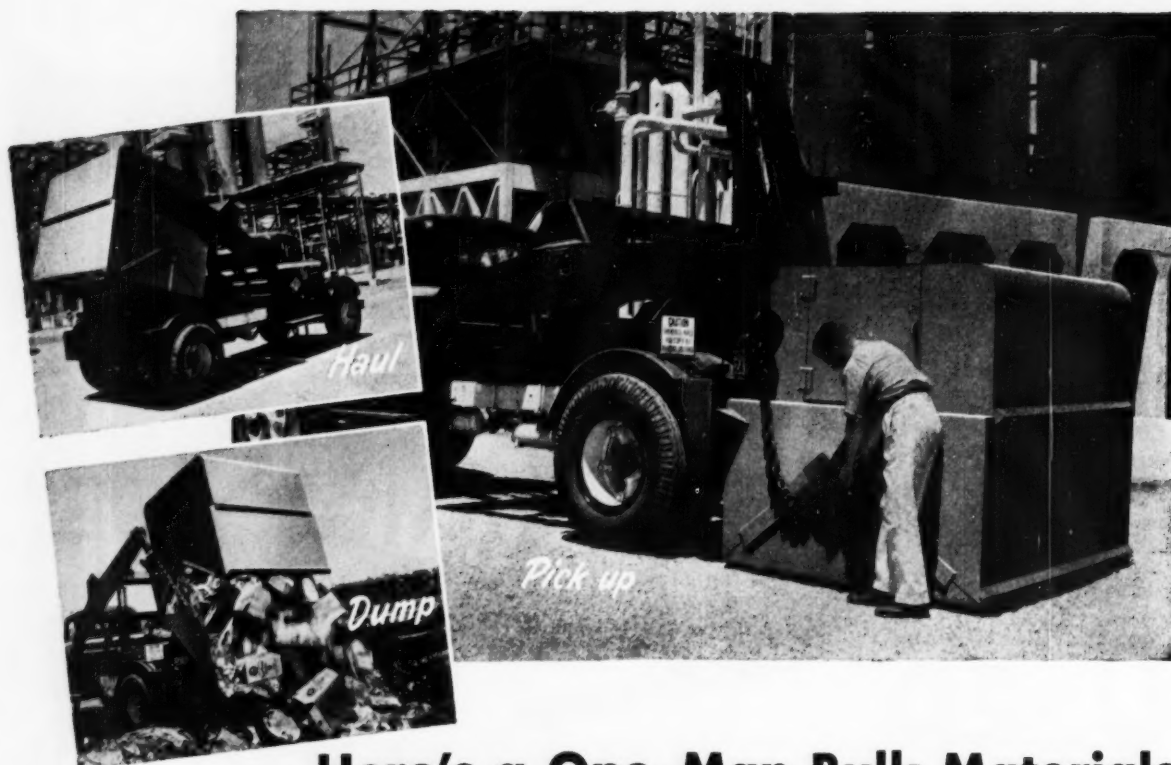
2931 N. E. CLACKAMAS STREET.....PORTLAND 8, OREGON

1031 MYERS STREET.....DANVILLE, ILLINOIS

Four Factories: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands



Circle No. 161 on Reader Service Card for more information



Here's a One-Man Bulk Materials Handling System for Your Plant...

In the Dempster-Dumpster System of bulk materials handling only one man, the driver of the truck-mounted Dempster-Dumpster, is required for operation. The Dempster-Dumpster serves scores of detachable Dempster-Dumpster Containers. Container capacities range up to 4 times that of conventional dump truck bodies and each container

is designed to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You simply place these containers at convenient materials accumulation points inside or outside buildings. When loaded each container is picked up, hauled and emptied (as shown above) or load set down intact. Entire op-

eration is handled by hydraulic controls in cab.

Containers shown below are just a few of the many available or that can be built to meet your needs. They enable you to handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver.

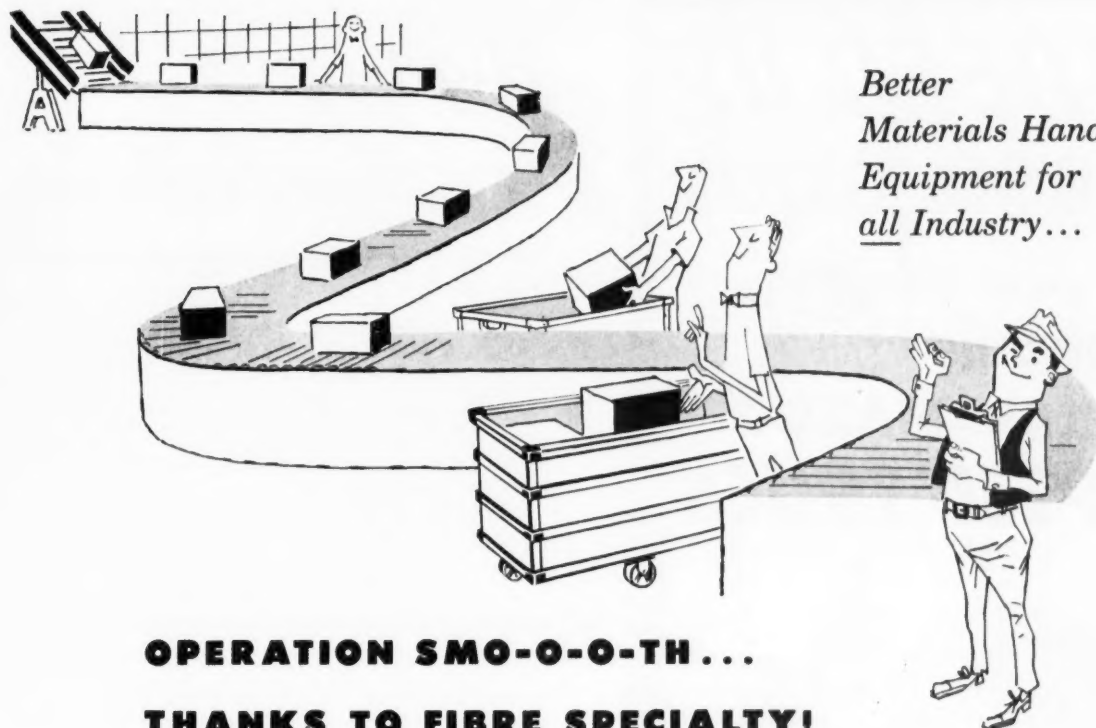
Without question, the Dempster-Dumpster System is the most economical and most efficient method of plant materials handling by truck ever devised!

Write to us for complete information. Manufactured exclusively by Dempster Brothers, Inc.



One Truck-Mounted
Dempster-Dumpster Handles Scores
of Containers... All Designs... All Sizes

DEMPSTER BROTHERS, 664 SHEA BLDG., KNOXVILLE 17, TENN.



*Better
Materials Handling
Equipment for
all Industry...*

OPERATION SMO-O-O-TH... THANKS TO FIBRE SPECIALTY!

Using the right equipment for each materials handling job in your plant can contribute much to an efficient, productive operation.

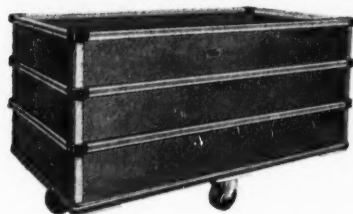
Fibre Specialty Equipment helps save time, assures safe product handling. It leads also to economy and good business generally.

We design, engineer and build a broad line of standard and special equipment, or complete materials handling systems for *your* specific plant requirements.

Why not let an experienced Fibre Specialty Engineer suggest the right set-up for your plant?

FIBRE SPECIALTY DIVISION NATIONAL VULCANIZED FIBRE CO.

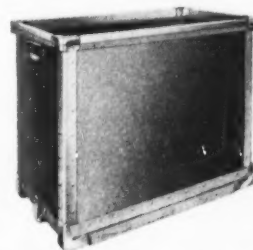
WILMINGTON 99, DELAWARE



TO KEEP THINGS MOVING... This tough, easy moving, multi-purpose hard vulcanized fibre truck will serve you well in many jobs. Available in Hercules or Dreadnaught construction in a wide range of standard or special models to fit your particular product or application.



A COMPLETE HANDLING SYSTEM... These strong, light weight tote boxes on dolly trucks are inexpensive, flexible, highly efficient materials handling systems. These complete units are adaptable to many industrial applications.



TOTE BOXES FOR MANY JOBS... Hard vulcanized fibre, special rolled plated top molding, plated steel angles, plated steel reinforced hand holes, corners, and hardwood runners.



NEW FREE CATALOG No. 54 illustrates and describes in detail our wide range of equipment designed for better materials handling. For your free copy write to Dept. L-6.

Circle No. 55 on Reader Service Card for more information

SPEED UP PRODUCTION

WITH THE
Versatile



KALAMAZOO SPEED TRUCK



Kalamazoo Tractor
with trailers—effi-
cient materials hand-
ling in congested
areas.

**Engineered to the
highest standards—
famous Speed Trucks are
doing outstanding jobs
in thousands of plants as
burden carriers.**

**Rugged and powerful,
these burden carriers can
also be used as Lubrica-
tion trucks, Maintenance
trucks, Personnel trucks,
Dump trucks, Fire trucks,
Mail trucks, Roving Tool
trucks, Crane trucks, etc.**

**Massive welded frame
... 2-cyl., 14 HP engine
... 15 MPH ... amazing
3-wheel maneuverability
... turning radius less than
7 feet! Special deck sizes
are available. Write
Dept. FL-5 for informa-
tion.**

KALAMAZOO
MANUFACTURING COMPANY
1827 Reed St. Kalamazoo, Mich., U.S.A.
FOURTY YEARS SERVING INDUSTRY ALL OVER THE WORLD

Circle No. 174 on Reader Service Card for more information

Highlights

of the month's news

Clapp & Poliak, Inc., has announced that it will stage the Sixth National Materials Handling Exposition in the International Amphitheater, Chicago, Illinois, May 16-20, inclusive, 1955.

It is reported that this Exposition will be the first to employ the entire combined areas of Chicago's International Amphitheatre and the new exhibition hall presently under construction.

The Materials Handling Exposition had its inaugural presentation in Cleveland in 1947, with 109 exhibitors, and drew an attendance of 10,300. In 1948, exhibitors numbered 196 and attendance, 14,000. The second renewal was held in Philadelphia, where 232 exhibitors participated, with attendance hitting the 17,135 mark; that was in 1949. The fourth show was held in 1951, in Chicago, with exhibitors numbering 266 and visitors, 22,000. In 1953, the Exposition returned to Philadelphia, where there were 322 exhibitors and 27,300 visitors.

• • •

Another merger involving companies in the material handling field, an apparent trend which began several years ago, was consummated a short while ago. Robert A. Pritzker, president of The Colson Corporation, announced the purchase of the assets of Service Caster and Truck Corporation by Colson.

"A principal objective in acquiring Service," says Pritzker, "was to further our program of providing a complete caster line. While Colson now manufactures approximately 8000 different casters, our line has not included casters for very heavy equipment. By adding the Service line, we will be spanning the field."

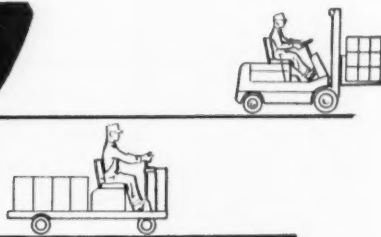
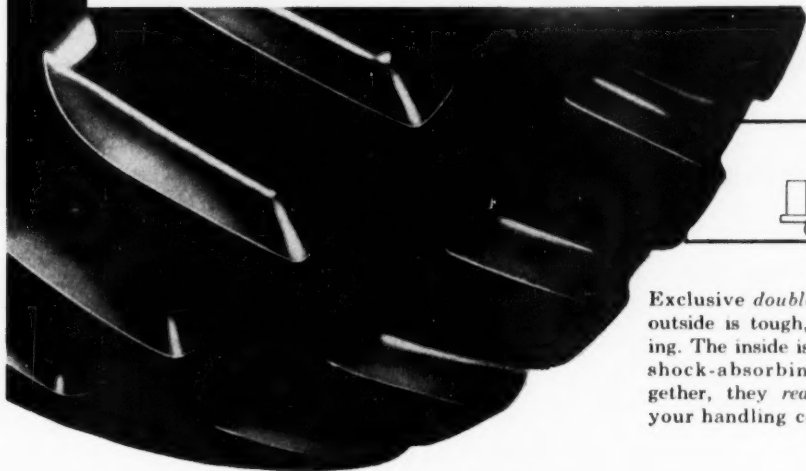
In commenting on the sale, Edward C. Hamm, president of Service, said, "We feel that the strengthening of the product lines, such as has been brought about by bringing together these two, old, well-established companies and the combined know-how of the two sales organizations, will place the new company in a better position to serve its customers."

"Although we feel that business generally will continue to be strong—despite the leveling off early this year—we recognize that competition will be increasingly keen and such a situation requires better trained sales organizations, supported by lower costs and improved factory production."

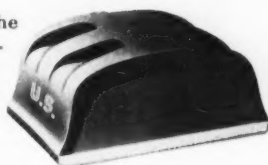
The purchase of the Service assets places Colson in the power equipment field for the first time, and expands Colson's production facilities to a total of four plants. These include the company's main factory at Elyria, Ohio, a Chicago plant, the Service plant at Albion, Michigan, and Service's plant at Somerville, Massachusetts.

U.S. ROYAL

INNACUSH — the original cushion solid



Exclusive double-tread! The outside is tough, cut-resisting. The inside is resilient, shock-absorbing. Together, they *really* cut your handling costs!



Rides Soft—Saves Big!

LOADS AREN'T SHAKEN



With the Innacush, your loads roll smooth and easy. Even small floor irregularities won't make them shift, break and waste your money.

TRUCKS AREN'T JOLTED



With the Innacush, your vehicles are cushioned and protected. You reduce truck maintenance and repair expense, especially to steering gear.

DRIVERS AREN'T FATIGUED



With the Innacush, your drivers aren't jounced and annoyed by shocks. Steering's easier. Morale's higher. More work is accomplished.

HERE'S PROOF YOU CAN SEE

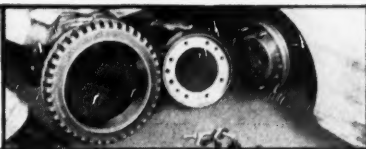


CONVENTIONAL SOLID—Watch the jagged white line, traced on film by a light on the truck's axle. It shows how a typical floor jars load—shakes truck and driver.

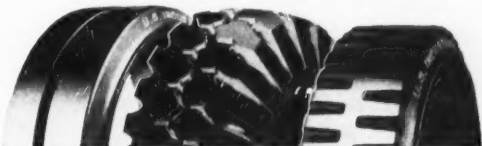


INNACUSH—But look at *this* white line. The truck and its course are identical, but now the bumps are evened out. Load, truck, driver are all guarded from vibration.

**Rapid Changing!
DEMOUNTABLE
INNACUSH**



Off with the old and on with the new in 10 minutes—without pressing charge, without costly down-time.



The most complete line of Industrial Tires is built by—U. S. Royal!



For more information, write Industrial Tire Department

UNITED STATES RUBBER COMPANY

1230 Avenue of the Americas, New York 20, N. Y.

Circle No. 133 on Reader Service Card for more information

Literature

featured in this month's advertisements

Lift trucks for heavy, light and unusual loads can be supplied by Lift Trucks, Inc. Seven different models are pictured this month.

Circle 84 on Reader Service Card

A safety curb that prevents damage to power truck tires is said by Magline Inc. to be the big difference in dock boards. Bulletin DB-204 contains complete facts.

Circle 88 on Reader Service Card

Safe, low-cost maintenance and repair with Wayne industrial truck service lifts is described by The Wayne Pump Company. An illustrated data book "Liftronic" is available for the asking.

Circle 137 on Reader Service Card

Fast movement of parts, packages and finished products is featured by Harry J. Ferguson Company, conveyor manufacturer. The company solicits tough handling problems.

Circle 148 on Reader Service Card

Babying of products is the special talent of Gaylord Container Corporation, according to its latest release. The boxes are said to cradle products in safety from the packing line to the end of the trip.

Circle 59 on Reader Service Card

How Wright Aeronautical slices big minutes off parts packaging time is told by The Celotex Corporation. The company manufactures industrial cane fiber board.

Circle 32 on Reader Service Card

Budgit aluminum chain blocks are featured as being light, easy to carry, hang up and use by the manufacturer, Manning, Maxwell & Moore, Inc. Bulletin 390 on I-beam trolleys gives details on lifting and moving the load.

Circle 90 on Reader Service Card

More than 80 varieties of flowable bulk materials can be handled in storage bins manufactured by The Neff & Fry Company. Literature will be sent upon request.

Circle 103 on Reader Service Card

How six feet were saved in every aisle by the Raymond electric tiering truck is told by The Raymond Corporation. Bulletin 830 gives further details on the truck.

Circle 146 on Reader Service Card

Forty-eight years of progress are pointed out by the Elwell-Parker Electric Company. The company has streamlined its trade name to "Elpar", but says there has been no change in quality, ownership or management of the company.

Circle 50 on Reader Service Card

Pictures of articulated axles that carry heavy loads safely over rough terrain are shown by Phillips Mine & Mill Supply Company. The company manufactures trailers in capacities from 6,000 to 250,000 pounds.

Circle 112 on Reader Service Card

Ideas and designs for magnesium products may be obtained from Brooks and Perkins, Inc. Special requirements, unusual sizes and odd lots are said to be no problem.

Circle 26 on Reader Service Card

Bulletin 423 from Union Special Machine Company tells how to close multiwall paper bags. The company claims its machines will lower production costs.

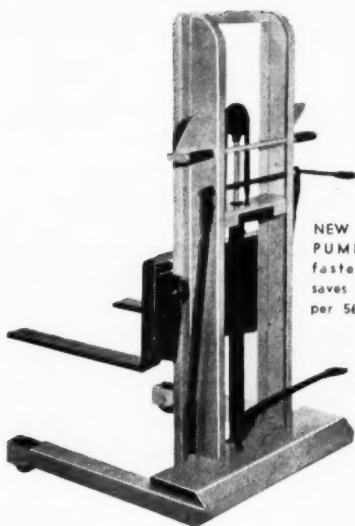
Circle 131 on Reader Service Card

An "Electric-Facts" booklet published by Clark Equipment Company shows and explains in detail the features of the company's line of electric-powered lift trucks. The manufacturer claims its electrics give better efficiency and operate on a longer work-cycle.

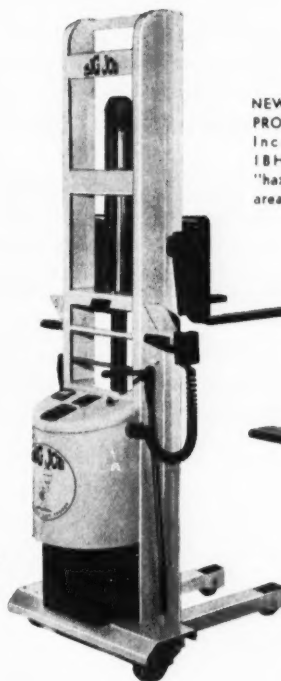
Circle 35 on Reader Service Card

Where space is limited, or loads are variable, American MonoRail tells how its equipment will solve the problem. Bulletin C-1 gives further details.

Circle 7 on Reader Service Card

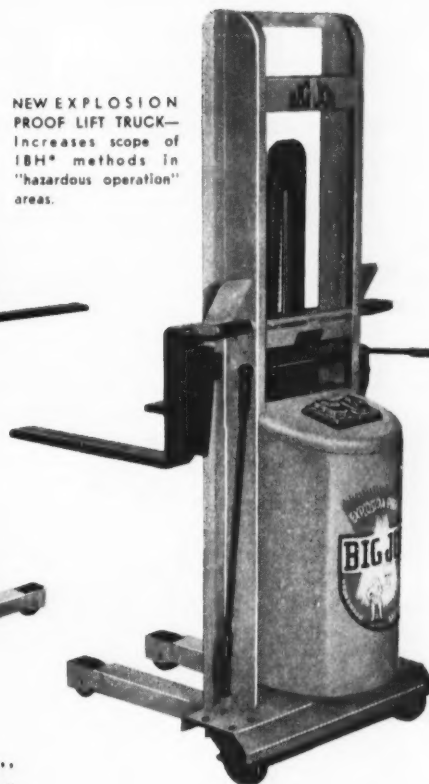


NEW TRIPLE ACTION PUMP—Brings easier, faster unloading—saves 21 foot strokes per 56" lift.



THE TIMESAVER LIFT TRUCK—Provides a lifting speed of 40 ft. per minute.

NEW EXPLOSION PROOF LIFT TRUCK—Increases scope of IBH* methods in "hazardous operation" areas.



"IN-BETWEEN HANDLING"
Short distance hydraulic manipulation of materials too heavy for manual handling, yet not requiring high-priced power driven equipment.

More than 40

BIG JOE® Models

These new materials handling FIRSTS added to a line of more than 40 "BIG JOE" hydraulic lift trucks increase the growing importance of "IN-BETWEEN HANDLING" to all industry. This advanced method for putting hydraulic power to work with greater effectiveness *vastly increases the economy of materials handling.*

MADE TO FIT — TO ECONOMIZE

For example "BIG JOE" lift trucks work in congested areas where power-driven units can not operate. You can select the exact model to fit the requirements of *each individual department*... thus avoid paying for more capacity than needed. No special operators are required—anyone can operate a "BIG JOE". You can have mechanical handling suited exactly to all requirements without

expensive maintenance. You can obtain the same lifting and stacking efficiency as provided in a power-driven fork truck—yet your investment is only a fraction of the cost.

USED EVERYWHERE

IBH* equipment has been used successfully in practically every industry. Manufacturing plants, chemical processing plants, food and drug warehouses, furniture storage concerns, appliance warehouses, terminals and docks etc. use "BIG JOE" lift trucks extensively.

"BIG JOE" offers a choice of foot operated and battery operated 6 and 12 volt system units—fork and platform types—lever control, push button control or throttle control . . . all guaranteed for quality.



"HYDRAULIC HANDLING FOR EVERY DEPARTMENT"

BIG JOE MANUFACTURING COMPANY

900-08 Jackson Blvd., Chicago 7, Illinois



Send for your copy of the informative booklet "IBH—The Economical In-Between System for Handling Materials".

©1954 Big Joe Mfg. Co.

Circle No. 20 on Reader Service Card for more information

AD LITERATURE

Continued

The Raymond Corporation points out that its pallet truck is light, rugged and easy to maneuver. More facts are available in a free bulletin.

Circle 145 on Reader Service Card

The 74-inch turning radius of the new Westinghouse front end loader is featured in this

month's ad. The unit is said to be a real time saver for moving bulk materials.

Circle 140 on Reader Service Card

Four separate handling and shipping problems were solved with one Generalift Pallet Box, according to General Box Company. The company has engineered containers for every shipping need.

Circle 60 on Reader Service Card

Equipment Manufacturing Inc. racks are said to be strong, safe and better engineered to save handling time and space from receiving to shipping. New catalog gives details.

Circle 51 on Reader Service Card

Bucyrus-Erie Company says its crawler crane will cut costs three ways by requiring less extra equipment, improving space utilization and giving faster, safer handling.

Circle 150 on Reader Service Card

Conveyors that are engineered to fit individual requirements are offered by Alvey Conveyor Manufacturing Company. The conveyors load and unload, and may be stored when not in use.

Circle 53 on Reader Service Card

The right tire for the right job-use is featured by Good-year Tire & Rubber Company. The company says industrial tires should be chosen by size, tread and compound and offers a complete choice of tires for any job.

Circle 68 on Reader Service Card

Bulletin 54 from The Moto-Truc Company invites a comparison of the company's line of walkie electric trucks. Maneuverability, functional design, ease of operation and ease of maintenance are a few of the features pointed out.

Circle 101 on Reader Service Card

The key to better performance and longer truck service is said to be a Hobbs engine hour meter. The meters tell when it's time to lubricate, change oil and overhaul. Manufacturer is the John W. Hobbs Corporation.

Circle 73 on Reader Service Card

One way a P & H hoist can save \$10,000 a year is told in latest literature. The complete story may be obtained for the asking. Manufacturer is Harnischfeger Corporation.

Circle 160 on Reader Service Card



... first choice as an industrial yard crane because it has

Fast Swing Speed!

Operating at 6½ r.p.m. (fastest on the market) a Wayne Crane on the job does more work than ordinary machines of this size in any given hour.

One-man operation and single engine powered . . . Wayne Crane 10-ton Model 20 keeps labor and maintenance costs to an absolute minimum.

Before you buy—compare—you'll see why you can't beat the performance of a Wayne Crane!



Also available: 8-ton Model 66 crawler-mounted
12½-ton Model 40 truck-mounted

FREE—Write today for a copy of the new "Handbook of Data for the Proper Selection of Industrial Yard Cranes."

WAYNE CRANE DIVISION

AMERICAN STEEL DREDGE CO. INC. • FORT WAYNE 1, INDIANA

Circle No. 136 on Reader Service Card for more information

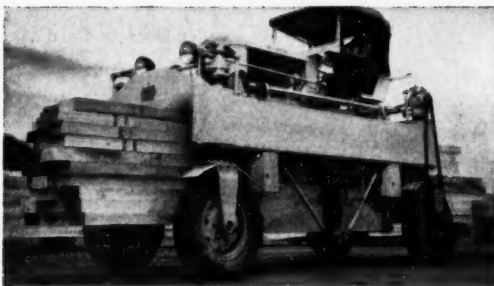
B.F. Goodrich

FREE TIRE AND WHEEL ANALYSIS can solve
your tire problems, reduce costs **20-50%**



The B. F. Goodrich Tire and Wheel Analysis Plan has reduced industrial tire costs 20 to 50% for hundreds of users across the country. It has solved seemingly hopeless cases of abnormal tread wear and premature failures. The B. F. Goodrich TW Analysis can help you cut your tire costs. Contact your local BFG retailer or mail the coupon below. Without cost or obligation a trained B. F. Goodrich man will study your materials handling operations.

The TW man will tell you what type and size tires, what tread design and compound will serve you best. He will recommend ways to improve your tire maintenance program. The advice you receive will be unbiased, for B. F. Goodrich makes a complete line of industrial tires. A special TW Analysis is available for manufacturers of industrial hauling equipment.



Heavy equipment and loads? Overloaded tires fail prematurely. Let BFG show you how to properly match tire and load. Make sure you are using the correct inflation pressures for pneumatics.



Avoid tire failures like this. The tire pictured here failed prematurely. BFG's TW Analysis helps you discover the reasons for tire failure, prevents reoccurrences, saves you tire dollars.

Without cost or obligation. The TW man is an expert. His free analysis of your materials handling operations can help you cut tire and tire maintenance expense.



The B. F. Goodrich Company
Tire & Equipment Division
Department TW-399
Akron 18, Ohio

Specify
B. F. Goodrich
tires
when
ordering
new
equipment

Please send me:

- ☐ Additional information on your Tire and Wheel Analysis Plan
- ☐ Free copy of "Industrial Tire Guidebook"
- ☐ Free copy of "How to Get Extra Service out of Solid Industrial Tires"

Name _____

Company _____

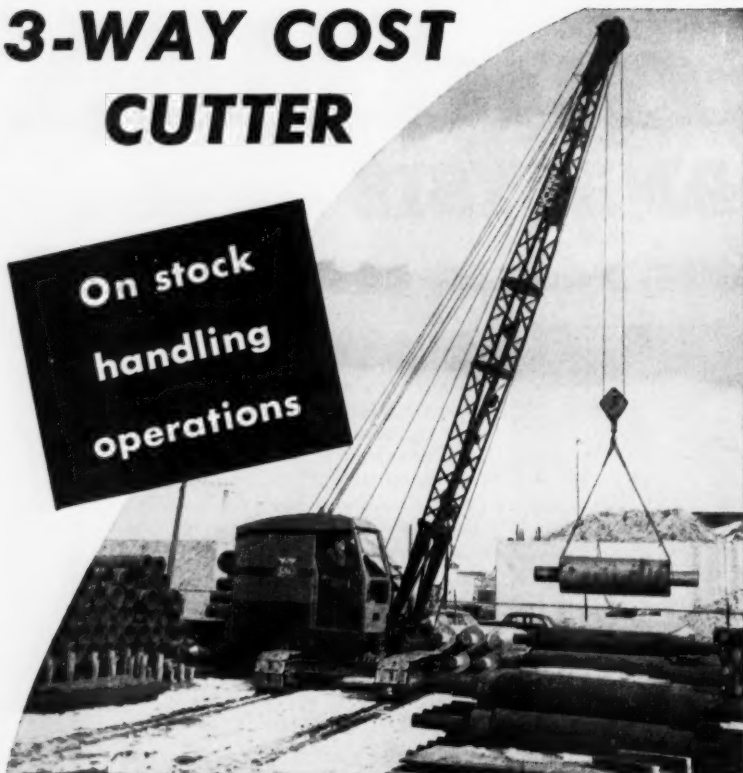
Street _____

City _____ Zone _____ State _____

Circle No. 66 on Reader Service Card for more information

3-WAY COST CUTTER

On stock
handling
operations



To solve the problem of getting difficult lifting and handling jobs done faster and cheaper, a mobile, high capacity Bucyrus-Erie crawler crane will cut costs three ways:

LESS EXTRA EQUIPMENT — Easy to handle, maneuverable Bucyrus-Eries travel to any job in the plant area wherever and whenever needed. No need for multiple stationary cranes or large yard crews.

IMPROVED SPACE UTILIZATION — When you can't spread out, go up. These cranes have long booms to stack material to any desired height . . . to reach into hard-to-get-at places.

FASTER, SAFER HANDLING — Wide square mountings give stability to swing heavy lifts fast and accurately. With the load power controlled by the engine, it's simple to ease it into position.

Clip, fill in, and mail the coupon today for the full story on how you can keep materials moving more efficiently between warehouse, yard, or factory the Bucyrus-Erie way.

BUCYRUS-ERIE CO.

SOUTH MILWAUKEE, WISCONSIN

BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

Gentlemen:

I'm interested in the application of Bucyrus-Erie cranes to materials handling. Send me literature.

Name _____

Company _____ Title _____

City _____ Zone _____ State _____

49E53

**BUCYRUS
ERIE**

Circle No. 150 on Reader Service Card for more information

AD LITERATURE

Continued

A free sample packet of labels, together with a descriptive folder is offered by Weber Label and Marking Systems.

Circle 139 on Reader Service Card

The complete strapping service—steel strapping and strapping tape from one source—is described by Brainard Steel Division, Sharon Steel Corporation.

Circle 24 on Reader Service Card

The Fried Steel Equipment Mfg. Corporation claims its Stripveyor pays for itself in less than 100 days. The equipment makes sheet handling wholly mechanical.

Circle 57 on Reader Service Card

Plant-wide handling is described by The Loudon Machinery Company. The company offers its engineering services for complicated or simple systems.

Circle 77 on Reader Service Card

The Wayne Crane Division of American Steel Dredge Company claims its units are first choice as industrial yard cranes because of the fast swing speed.

Circle 136 on Reader Service Card

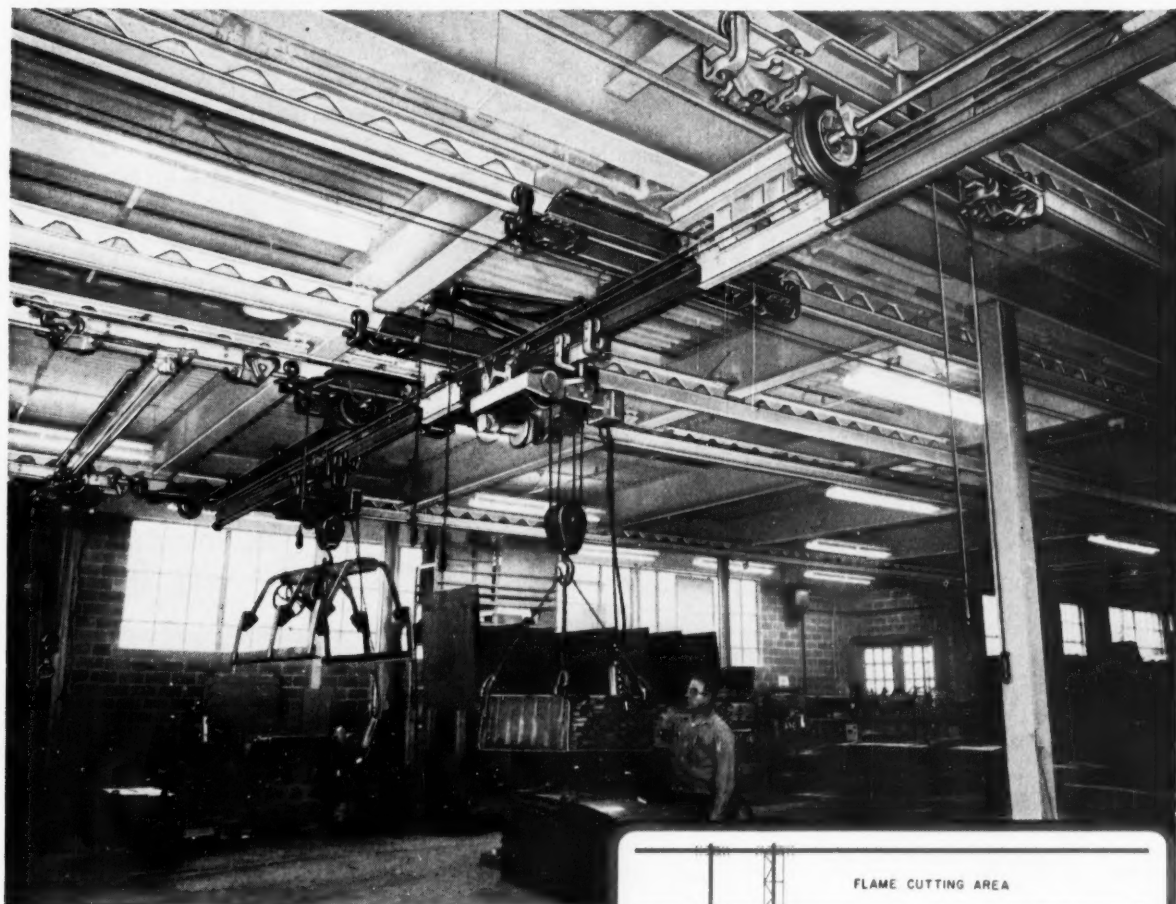
The mobile radio said to have a thousand uses is pictured and described by Bendix Radio Division of Bendix Aviation Corporation. It is a two-way transmitter which may be used as a fixed station or mobile unit.

Circle 18 on Reader Service Card

Feeding a production-hungry plant with a one cubic yard "spoon" is explained by Allis-Chalmers Tractor Division. The tractor-shovel receives material, builds storage piles and keeps production moving.

Circle 3 on Reader Service Card

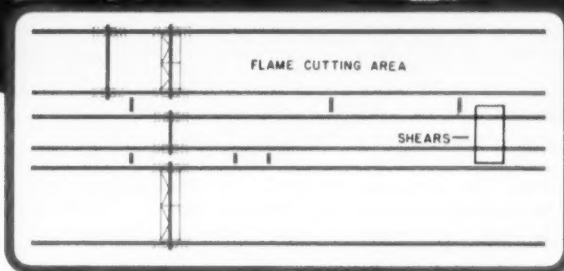
Need plant-wide handling?



Here Louden can serve you best

Typical of how Louden Engineered Handling Systems can integrate the handling operations in an entire plant or any part thereof, is the installation shown above. Here an eastern manufacturer uses a Louden Interlocked Crane and MotoVeyor System to cover unloading, storage, shearing and flame cutting. A Louden MotoVeyor picks up a 5-ton bundle of steel sheets or bar stock from a truck, travels via transfer sections from one crane to another, there to unload in storage, or to carry its load to shears or flame-cutting department. It does this without setting down the load, without rehandling, without delay or interference to other operations.

Handling costs are *always* cut, handling is *always* accelerated, manpower needs are *always* reduced,



production *often* increases when Louden *engineered* systems take handling out of the hands of men, off the floor, out of the way of production. From integrated plant-wide handling system, to simple hand-pushed monorail carrier, Louden's longest experience and competent engineering will best meet your needs.

THE LOUDEN MACHINERY COMPANY

4306 Broadway, Fairfield, Ia.

A Subsidiary of Mechanical Handling Systems, Inc.



MONORAIL & CRANES



SEND FOR THIS BOOK—
Write for your copy of "Economical Material Handling" . . . full of time-saving, cost-cutting ideas and case histories. Free . . . no obligation.

Since 1867—the first name in materials handling

Circle No. 77 on Reader Service Card for more information

AD LITERATURE

Continued

May-Fran Engineering Inc. features hinged-steel belt for tough job handling. Products are said never to be too hot, too heavy or too abrasive for handling by this manufacturer.

Circle 94 on Reader Service Card

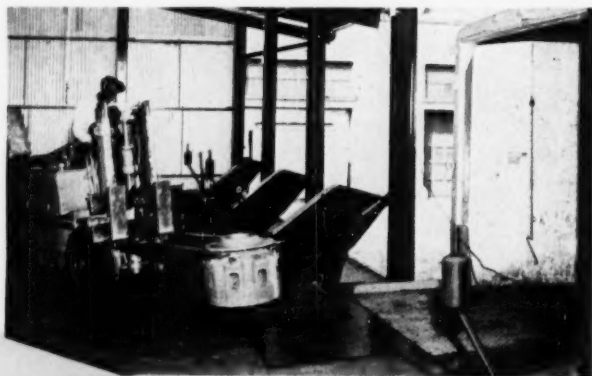
A safety hook which may be installed on new and old hoists

is detailed by Coffing Hoist Company. The company invites comparison of its equipment.

Circle 38 on Reader Service Card

How the latest Jaeger 12 cubic foot Auto-Scoop speeds one-man handling of bulk material is described by The Jaeger Machine Company. In-action photos illustrate the points mentioned.

Circle 156 on Reader Service Card



RITE-HITE ADJUSTABLE LOADING RAMPS

for greater loading dock efficiency

HORIZONTAL ADJUSTMENT lines ramp up with truck, reduces truck maneuvering to a minimum.

EASY OPERATION. Because of the exclusive Rite-Hite® precision counterbalance, only fingertip pressure is needed to raise and lower the ramp.

NO OBSTRUCTION TO DOCK EDGE OR DOORS. In the "up" position Rite-Hite doesn't protrude beyond dock edge. Can be modified at no extra cost to provide clearance for overhead doors when ramp is in raised position.

LITTLE OR NO MAINTENANCE. Simple, rugged, mechanical design. No pipes, pumps, gears or motors, no complicated mechanism.

SAFETY TREAD AND CURBS give sure footing and traction for men and machines, prevent material handling trucks from running off edge of ramp.

LOW INSTALLATION COST. Installation in new construction adds little or nothing to the cost of the building. In existing construction, installation costs are modest.

**3 TYPES,
5 MODELS**

**10,000 AND 20,000-
POUND CAPACITIES**

Priced from \$395.00

**Get all the facts
about RITE-HITE**

RITE-HITE® DIVISION
LOOMIS MACHINE COMPANY
FOURTH AND PINE STS. • CLARE, MICH.

Send for
Bulletin.
Write
Dept. F-44



Circle No. 85 on Reader Service Card for more information

Bulletin 63-D from Standard Conveyor Company describes modern time and cost savers. The company tells of its 45 years of conveyor experience, in both power and gravity units.

Circle 123 on Reader Service Card

More and faster deliveries at lower cost are featured by the Anthony Company, manufacturer of hydraulic lift gates. One cylinder opens, closes, lifts and lowers truck gate.

Circle 8 on Reader Service Card

Portable heavy duty bar racks designed and manufactured by Palmer-Shile Company are pictured in various sizes and capacities. Free catalog gives further details.

Circle 87 on Reader Service Card

Seventy-five years of caster manufacturing experience is pointed out by the Bassick Company. The "floating-hub" caster is pictured and described, and is said to be the only caster which will absorb vertical and horizontal shocks.

Circle 15 on Reader Service Card

Better material handling equipment for all industry is described in catalog 54 offered by Fibre Specialty Division, National Vulcanized Fibre Company. The equipment is said to save time and assure safe product handling.

Circle 55 on Reader Service Card

American Chain Division, American Chain & Cable Company tell what "Acco Registered" means. The dependability of the company's sling chains is highlighted.

Circle 5 on Reader Service Card

The Cambridge Wire Cloth Company points out why its woven wire slings are safer and more versatile in a free booklet, "The Gripper Story".

Circle 31 on Reader Service Card

NEW BAKER "Yardloader"

TRADE-MARK

4000 LB. GAS FORK TRUCK

COSTS ONLY \$2985.00



Priced about 25% under any other gas trucks in its capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service

over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to \$1000.00 on your next gas fork truck.

Send in this coupon today.

THE BAKER-RAULANG COMPANY

1219 West 80th Street • Cleveland 2, Ohio

The Baker-Lull Corporation • Subsidiary, Minneapolis, Minn.
Materials Handling and Construction Equipment

Circle No. 151 on Reader Service Card for more information

TO THE BAKER-RAULANG CO., 1219 West 80th St., Cleveland 2, Ohio

Please send me information and specifications on the new Baker EY-40 Yardloader which sells for only \$2985.00.

Name _____ Title _____

Company _____

Address _____

City _____ State _____



"AFTER TESTING ALL TYPES...we standardized on Magcoa Dockboards"

SAYS JAMES McCABE, CHIEF INDUSTRIAL ENGINEER,
AMERICAN MAIZE-PRODUCTS CO., ROBY, INDIANA

"Before standardizing on Magcoa Dockboards," says Mr. McCabe, "we tried all types—both heavy-metal and another type of light-metal, 'home-made' and specially made. Then we chose Magcoa Dockboards because they're light and easy to use, and yet hold up under constant hard wear."

"Cost records for our 31 Magcoa Dockboards, used on both truck docks and rail docks," continues Mr. McCabe, "show a measurable savings of more than \$2500 a year in labor, truck and tire maintenance—plus an immeasurable employee relations benefit because our Magcoa Dockboards are safe and save strain. They actually paid for themselves in their first three years of service."

A suggestion: Ask for a copy of our new Facts File that shows how Magcoa Light-Weight Heavy-Duty Magnesium Dockboards can save money and speed handling for your company. Use the handy coupon.



James McCabe, Chief Industrial Engineer, American Maize-Products Co., a cost-reduction, warehousing and palletizing expert; a frequent speaker and author of many articles on materials handling.



MAGNESIUM COMPANY OF AMERICA

MATERIALS HANDLING DIV., EAST CHICAGO 1, IND. — Representatives in Principal Cities

DIVISION OFFICES:

NEW YORK 20,
30 Rockefeller Plaza
PHILADELPHIA 18,
8001 Southampton Ave.
WASHINGTON 5, D. C.
Walker Bldg.
HOUSTON 17,
7657 Moline St.
EL SEGUNDO, CAL.
(Los Angeles)
1017 El Segundo Blvd.

☐ Please send me the free new Dockboard Facts File

Name & Title _____

Company _____

Address _____

City-Zone-State _____

Circle No. 89 on Reader Service Card for more information

AD LITERATURE

Continued

Eight reasons why Sackner Products' Cush-On-Strap will help you are given in literature available from this firm. The strapping is said to be ideal for protective packing of all types.

Circle 119 on Reader Service Card

Circular 35-A from Lewis-Shepard gives facts about the company's new Model M straddle fork truck. The company claims it is the safest end-control truck ever made.

Circle 83 on Reader Service Card

A fact file on industrial floor sweepers is available from Parker Sweeper Company. The unit is said to sweep up to 400 percent faster than pushbroom cleaning.

Circle 154 on Reader Service Card

A 24-page shipping guide is offered by American Sisalkraft Corporation. The booklet tells how to save shipping costs through protective packaging.

Circle 13 on Reader Service Card

An automatic answer to "light product" conveying problems is told by Union Steel Products Company. The company specializes in moving light goods swiftly, quietly and safely.

Circle 132 on Reader Service Card

Adjustable loading ramps for dock efficiency are featured by Rite-Hite Division, Loomis Machine Company. Three types and five models are offered.

Circle 85 on Reader Service Card

Two-way mobile radio selectivity is guaranteed for life by General Electric Company. Literature points out features of the unit, and gives details on the guarantee.

Circle 61 on Reader Service Card

Look at all the features

that are built right into the PALITON



Fast-acting hydraulic pump; full five-inch lift ensures smooth travel over rough, uneven surfaces.

Twin front wheels for high maneuverability.

Ball bearings fitted in all wheels and steering swivel.

Overloading prevented by factory-set relief valve.

Hard chrome-faced rams and pump piston assure long life.

- Rubber or steel tires to suit customers' requirements.
- Quick and easy detachment of hydraulic unit for service or replacement.
- Controlled lowering speed.
- Pressed steel forks for high strength.
- Capacities—3,600 lb. and 4,600 lb.
- Fork lengths—36", 42", 48".
- Widths overall forks—20½", 27".

- Model illustrated, has been produced to meet universal demand for a pallet truck of high quality and modest cost. It is designed for the simplicity and strength that guarantee long life and trouble-free service.

NOTE THE VERSATILITY OF THE PALITON



Handling pallet loads of heavy parts and components.

Unloading shipments from highway and rail trucks.



Easily maneuvered for maximum space utilization.

Ease of handling with full loads preventing bottlenecks.



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Circle No. 57 on Reader Service Card for more information

*Pays for itself in
Less than 100 days*



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Stripveyor
Patented
makes sheet handling
wholly mechanical

Automatically picks up cut strips, conveys them beyond shear bed. Makes shear 100% efficient. Adjustable to any height up to 45"—synchronous to shear speed—handles any gauge sheet up to $\frac{3}{8}$ ", widths as wide as allowable by standard 20" back gauge, lengths to size of shear. Portable! Caster-supported carriage supplied with floor locks.

STRIP TO .005"

FRIED
Liftveyor
Patented

Enables clean-cut wide shearing to .005" regardless of material. Eliminates flexing—supports sheet from underside while sheet edge is against back gauge—then conveys it beyond shear frame. For sheet or plate up to $\frac{3}{4}$ " thick.



For complete
strip handling convenience
add FRIED Strip-Stocker to
Liftveyor or Stripveyor.
Write for full details today!

FRIED STEEL EQUIPMENT MFG. CORP.
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BOWSER
ESTABLISHED 1885

**... MODERNIZE YOUR LIQUID
HANDLING METHODS NOW**

Install Bowser XACTO, the meter that's changing chemical processing habits. Wherever accurate measurement is essential to assure product uniformity . . . XACTO will do the job.

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AD LITERATURE

Continued

Wright Hoist Division of American Chain & Cable Company tells why its hoists are the lowest in maintenance cost in new literature now available.

Circle 6 on Reader Service Card

The story of how new torque converters boost Payloader output is told by The Frank G. Hough Company in free new bulletin. Featured is the company's latest model HAHG tractor-shovel.

Circle 74 on Reader Service Card

How to open doors in 20 seconds or less is told by The Nolan Company in this month's ad. The firm manufactures a one-man car door opener.

Circle 106 on Reader Service Card

Troubled with broken floors? Rock-Tred Corporation will show you how to fix them fast with a ready-mixed product, said to take only one minute per square foot to apply.

Circle 117 on Reader Service Card

How one company's cut 7.7 percent off packaging cost is detailed by Mid-States Gummed Paper Company. The company is offering a free sample roll of its Tape-Strap, for plant testing.

Circle 99 on Reader Service Card

How to save up to \$1000 on your next gas fork truck is explained by The Baker-Raulang Company. The company has a new "Yardloader" fork truck specifically designed for yard-handling problems.

Circle 151 on Reader Service Card

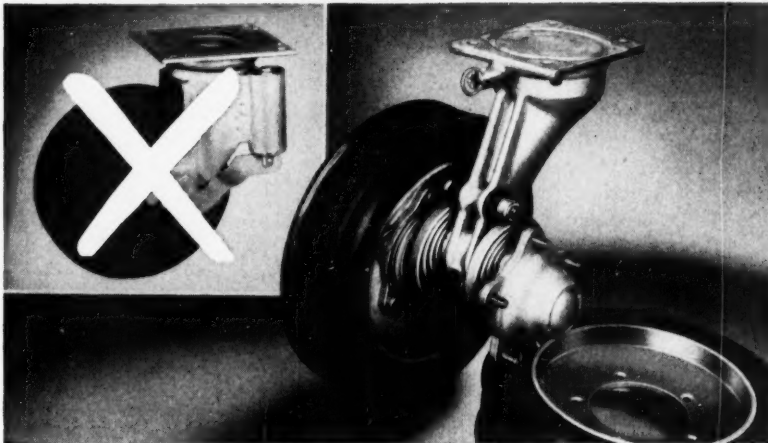
Automatic Transportation Company is offering a brochure which shows how to chart and analyze your own materials handling operations. The chart was prepared by a leading materials handling engineer, and is said to be quick, informative and easy-to-read.

Circle 12 on Reader Service Card

MATERIALS-HANDLING NEWS

★ Panel Discussions by Bassick, World's Largest Manufacturer of Casters and Floor Protection Equipment ★

Only caster made to absorb vertical and horizontal shocks



ROCKER-TYPE spring-mounted caster originated by Bassick — discarded in 1939.

1954 "FLOATING-HUB" caster for 20-mph service, showing construction details.

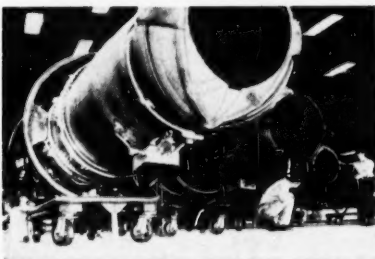
15 years ago Bassick discarded "baby carriage bounce" system

You get *true* shock absorption in a Bassick "Floating-Hub" caster.

Unlike recently introduced spring-loaded, rocker-type casters, "Floating-Hub" casters absorb *both* horizontal and vertical shocks. Patented construction actually "floats" spring-controlled wheel in the frame, providing mechanical resiliency between rim and

axle. Even over bumps and rough surfaces, all four wheels remain in contact with the floor — giving fragile and liquid cargoes a safe ride.

"Floating-Hub" casters have built-in snubbing action to give genuine shock absorption — an exclusive Bassick feature. They can't wobble, either, because wheel is kept rigid. Write for new Booklet FH-53, for facts on where and how to use Bassick "Floating-Hub" casters.



GE turbojet engines ride to inspection on "Floating-Hub" casters

You're looking at the business end of a big General Electric Company J-47-17 turbojet engine. It powers the U.S. Air Force's crack F-86D jet fighter plane to near-sonic speeds with help of afterburner. GE entrusts these jewel-like engines to Bassick "Floating-Hub" casters for safe handling.

Three new medium-duty "Floating-Hub" casters for 100- to 1000-lb. loads



Series "FG" Air-liner caster for high-speed service. "Floating-Hub" plus rubber "Floatread" wheels absorb shocks. 10" and 12" sizes.

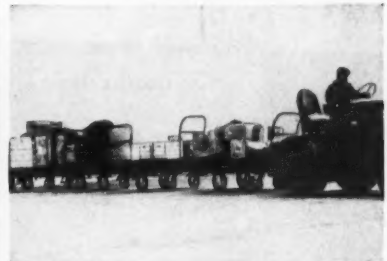


Series "09" caster with "Floating-Hub" shock-absorbing action comes in 5½" and 7" dia. wheels. Rubber or semi-steel tread.



Series "S09" carries 560-lb. load with iron-core rubber tread wheel; 1000 lbs with 8" dia. semi-steel wheel. "Floating-Hub" action.

Not one caster failure in six years



These 12-truck warehouse trains at the Philadelphia Naval Aviation Supply Depot have been running on "Floating-Hub" casters since 1948.

In these 6 years not one caster has failed. That's typical of the service these casters deliver.

Complete load protection on every trip

Since 1948, "Floating-Hub" casters have prevented damage to N.A.S.D. cargoes. Accurate tracking through sharp turns is now provided.

Big savings

Prior to 1948, extra riders were required to replace fallen parcels. Today, only one man is needed — to drive. In addition, "Floating-Hub" casters do no harm to road and area surfaces — eliminating previous repair expenses.

Get the facts

Your Bassick industrial distributor has all the facts on the most complete line of shock-absorbing and conventional casters. He can give you valuable help in putting Bassick casters to work in your plant. You'll get fast service from him on all your requirements. Or write Bassick direct.

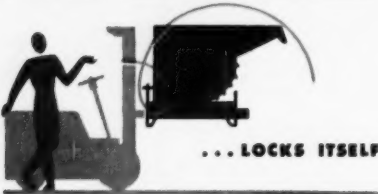


THE BASSICK
COMPANY
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MAKING MORE KINDS OF CASTERS... MAKING CASTERS DO MORE

75 YEARS OF CASTER LEADERSHIP



Unload 2 tons with 1 hand

It's easy with a Roura Self-Dumping Hopper. Simple, one-man operation does it with amazing speed . . . cuts cost of hand unloading by at least 50%. That's why hundreds of leading industries have found it the safe, sensible, economical way to handle wet or dry, hot or cold bulky materials.

It fits securely on any standard fork or platform lift truck . . . turns it into an efficient, semi-automatic dump truck. And, remember . . . Roura makes 'em rugged . . . extra heavy gauge welded construction . . . to withstand years of toughest treatment. They're available in sizes from $\frac{1}{2}$ to 2 cubic yards.

Let Roura help you cut costs.

ROURA Self-Dumping HOPPER

WANT DETAILS?

Clip this coupon . . . attach it to your letter-head . . . sign your name . . . and mail to . . .

ROURA IRON WORKS, INC.

1411 Woodland Ave., Detroit 11, Michigan

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62

AD LITERATURE

Continued

The Baker-Raulang Company gives facts on how its Traveloader replaced three trucks and released six men for other work, resulting in a savings of approximately 70 percent.

Circle 14 on Reader Service Card

A personal indorsement of Magcoa dockboards is given by a prominent industrial engineer, who tells why he standardized on the boards. Manufacturer is Magnesium Company of America.

Circle 89 on Reader Service Card

Fast, safe handling with low cost power is pictured and described by the Exide Industrial Division of The Electric Storage Battery Company. The company claims its units are the best power buy at any price.

Circle 48 on Reader Service Card

Features of the Mobil-Matic Drive with Hydra-Lizer are pointed out by Lamson Mobil-lift Corporation. No clutch pedal is required for the drive, and there is just one forward and reverse lever.

Circle 157 on Reader Service Card

Gould industrial batteries are said to have extra strength, extra ruggedness, extra ability to work harder, longer and at lower cost. The endless energy of the batteries is pointed out by the manufacturer, Gould-National Batteries, Inc.

Circle 70 on Reader Service Card

The key to power in Buda fork lift trucks is the heavy industrial duty engine. The company manufactures its own engines and points up its cylinder liners, crankshaft and connecting rods. A 36 page data book gives complete facts.

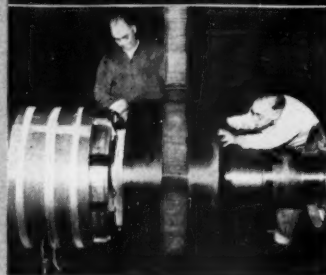
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GRIPPER

WOVEN WIRE

SLINGS

SAFER—
MORE VERSATILE



SAFER—because each sling is pre-tested to rated load capacity before shipment, pre-tested with a 5-1 safety factor. Moreover, the spiral loop construction of Gripper slings guards against sudden breaks in use . . . specially heat treated handles provide extra strength at the hook.

MORE VERSATILE—use your Gripper sling for light or heavy, bulky or compact loads of any material or parts. Fully flexible sling body grips completely around even small radius loads in choke hitch. Broad, flat sling body provides wider bearing surface for greater load stability in either basket or choke hitch.

AVAILABLE—in standard lengths and widths with capacity up to 100,000 lbs. Special sizes and capacities on request. For details, see your mill supply, materials handling or safety equipment distributor. Or, write direct for free catalog and name of nearest distributor.



The Cambridge Wire Cloth Co.

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CONVEYOR
BELTS

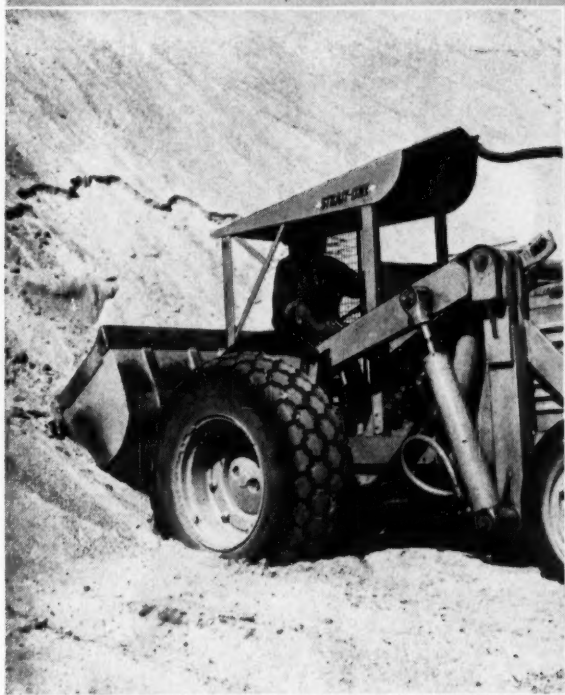
SPECIAL
METAL
FABRICATIONS

OFFICES IN LEADING INDUSTRIAL AREAS

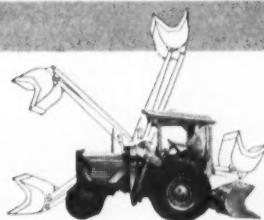
Dealers—write for open territory data.

Circle No. 31 on Reader Service Card

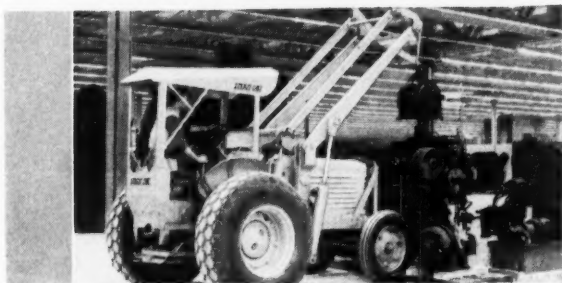
FLOW • JUNE, 1954



short cut to bigger profits...



OLIVER DIESEL AND STRAIT-LINE LOADER!



Boom attachment that lifts either front or back increases usefulness of loader. Hydraulic control is precise and accurate. Other attachments include bulldozer blade, lifting fork, and a variety of buckets from $\frac{3}{4}$ - to 2-yd. capacity.

Diesel economy and short-cycle loading—that's how the Oliver diesel tractor and Strait-Line loader short-cut to more profit on any loading job. Compare this unit with other loaders...it digs in *front* or *rear* and loads in *front*...always working in a straight line. The rear-carried bucket increases traction, makes steering easier and permits bigger loads.

Now add the ruggedness and economy of either the Oliver "77" or "88" diesel tractor. Here is a 6-cylinder diesel you can count on for quick starts and downright lugging ability to do more work at less cost. Get acquainted with this unit by driving it yourself. Check its features and you'll see why you get more yardage at a lower cost with an Oliver diesel and Strait-Line loader. See your Oliver Industrial Distributor.

THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois

a complete line of industrial wheel

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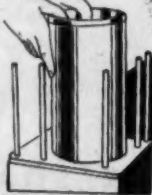
and crawler tractors

Your key to **POWER**

in **BUDA** Fork Lift Trucks!

BUDA CYLINDER LINERS

Replaceable, wet sleeve cylinder liners! No need to rebores, to use oversize pistons or rings, never a danger of hot spots!



BUDA CRANKSHAFT

Drop-forged, heat treated, TOCCO hardened. Drilled for pressure lubrication of all bearings. Static and dynamic balance.

BUDA CONNECTING RODS

Heavy-duty forged steel, large-size piston bearings, bronze wrist pin bushings. Rifle drilled to accommodate full pressure. Compact size, weight with other connecting rods... note ruggedness.



Diesel or gasoline—Buda builds them both! Here's the heart of Buda Fork Lift Truck—an engine that's built for heavy industrial duty... a mighty power plant with precision parts—more rugged from fan to flywheel. Buda-built engines—both gasoline and Diesel—are engineered for durability, dependability and exceptionally long life. Users report overhaul time of over 4,000 hours, 85% of the parts are interchangeable—Diesel or gasoline—all models! But Buda's terrific power plant is only part of Buda's story of material handling low cost, long-life operation. Send for the **complete** story today!

BUDA

THE BUDA COMPANY
HARVEY, ILLINOIS

A Division of Allis Chalmers Manufacturing Company
Diesel and Gasoline Engines, Lifting Jacks,
Railroad Equipment, Earth Drills,
Materials Handling Equipment.

Send for the **Buda Data Book**
Here's the fascinating story of the only fork lift truck designed for materials handling at the lowest possible cost. 36 pages, amply illustrated, this data book belongs on your desk. Write or phone today!



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FLOW • JUNE, 1954

FLOW inaugurates, with this article, a series of features covering material handling activities in some of the "best companies in America"—as designated by The American Institute of Management.

Names of firms to be so featured have been selected from "The Top Twelve" listed in the Institute's *Manual of Excellent Management*. They were the highest scorers on comparative audits made of some 4000 companies in the

United States and Canada for the year 1953.

To be named one of the Top Twelve is universally considered a signal and well deserved honor.

Articles—some brief, some detailed—which tell FLOW readers about the organization, methods and systems in connection with material handling activities in these firms may well be, the editors believe, among the most significant to be printed in the industrial press this year.

Material Handling in a "Best Managed" Firm-- *The B. F. Goodrich Company*



Paul W. Watt
The B. F. Goodrich Co.

Organization of Material Handling

Responsibilities for material handling at The B. F. Goodrich Company, Akron, Ohio, are centered in the factory service division. This includes package engineering, receiving, warehousing and inside and out-

side transportation.

This division has control of practically all powered handling equipment in the Akron plant and acts in an advisory capacity to material handling departments in outside plants.

The division has its own mechanics trained in the maintenance of equipment of latest design. Equipment includes yard cranes, bulldozers, a railroad crane, diesel engines, industrial trucks, and a motor tractor

(More on next page)



NERVE CENTER of handling system is central dispatching station, where, within seconds after call, order will be telecribed to area dispatching station.



TRANSCRIBED order received from central dispatching is handed to industrial truck operator by foreman. Communications cover 50 buildings of 1 to 8 floors.

"Best Managed" Firm

Continued

and trailers.

According to Paul W. Watt, superintendent of the factory service division, the Goodrich Company's decision to centralize major material handling responsibilities is the most important factor in the achievement of present operating efficiency.

With one department head now responsible for the direction of major handling jobs, operating costs have become immediately accessible for management review. In addition, centralization of material handling activities reduces the amount of equipment needed, creates economies when the same equipment does double-duty (based on variances between production

schedules of different departments), and provides good lateral communications between service and manufacturing departments.

Methods and Systems

An outstanding feature of the company's material handling operations, Mr. Watt notes, is that practically all industrial and motor truck operations are on an incentive basis.

Improved efficiency in material handling operations has resulted from the interest and cooperation of all levels of management in finding better methods of

ORDERLY YARD typifies material handling at Goodrich. Here drums are palletized and stored three tiers high to conserve inside storage space. Note convenient highway truck dock.





PALLETIZED at the supplier's factory, rayon is unloaded and stored by fork truck in the Goodrich Akron warehouse. Load designed by BFG package engineers, eliminated many wasted hours of warehouse handling.

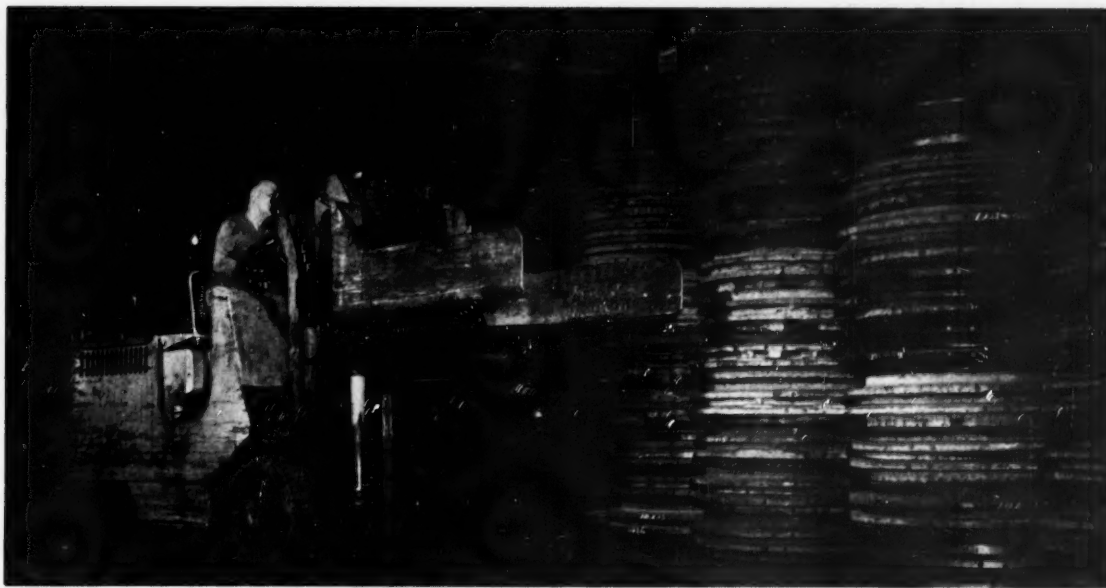
handling. Top management has paved the way for efficient material handling operations by coming to an understanding of the problem and providing the equipment needed to do a good job.

Rapid and sure communications are largely responsible for the efficiency of material handling at Goodrich. The nerve center of the handling system is the central dispatching station, which serves 50 buildings, from one to eight floors in height. Orders are received here and dispatched by telescriber to the area

dispatching station closest to the call. The dispatcher directs the work of 75 industrial trucks.

Proper packaging of the products produced by the company is considered of such importance that a division is maintained just for that purpose. A thorough knowledge of various packing techniques has made it possible to work out programs which are of primary benefit to the company and, when passed along to the customer, prove to be economical to him as well.

RELEASE of 600 skids from mold storage for other uses has resulted from employment of this clamp truck. Equipment is also used to sort and deliver tire molds direct to curing room.



● Here's a frank, outspoken discussion of the problems facing the users and potential users of industrial two-way radio, presented by an executive whose responsibility it is to purchase this type of equipment for his company.

What's Ahead for Industrial Radio?

By Herbert E. Markley
Secretary, The Timken Roller Bearing Co.

SOME means of communication is necessary in any organized activity. It often becomes a problem in the handling of materials, especially when the distance involved takes equipment from line of sight, and time is very, very important.

Years ago, when orders were communicated verbally, mistakes were made in the transmission from one person to another, with no adequate means to check the error until the damage which had been done could be measured in accumulating costs and lost time.

So, a newer school of thought embraced the idea of written messages. The practice of writing all instructions pretty well solved the matter of mistakes—or at least it fixed the responsibility for them. But writing consumed a great deal of time in preparation, more in transmission and, finally, additional time in filing.

Most of us have had telephone service available to speed up the transmission of communications, but it has until recently been limited to fixed points. When mobile telephone became available, a number of us tried it but found it wanting in the very fast pace of a dynamic production setup.

So it was that, since World War II, mobile radio became for manufacturers a new and better means of communication, made possible by Section 11.501(a) of the Special Industrial Radio Service Rules. It has to this time developed as the only satisfactory means of verbal communication which, in a well-developed system, completely eliminates the need for paper.

Some manufacturing companies already have integrated radio into their production programming via the material handling route. Many more will do so. The Committee on Manufacturers Radio Use in its petition to the Federal Communications Commission said: "The rapid growth of radio communications in manufacturing operations during the past two years,

and the existence of large groupings of eligible manufacturing plants in a number of industrial areas, assure intensive and widespread use of radio in production operations, limited only by the degree of ingenuity applied by supervisors and managers, which is considerable."

In establishing a production schedule, the scheduler should be intimately acquainted with the potential use of radio so that he may prepare his schedule with full reliance on radio getting the right materials to the right place at the right time. This schedule, when given to the radio dispatcher, enables him in turn to direct radio-equipped material handling equipment to start moving the required material with a minimum of lead time, assuring no delay at the machine where the material is expected.

Eliminates Confusion

It has been demonstrated time and time again that the integration of radio into production scheduling eliminates confusion of orders; it increases immeasurably the satisfaction of customers because they receive their orders as scheduled; and there is an almost complete absence of wrong products shipped. Even more important, however, is the fact that costly capital equipment is not idle for lack of materials. When we consider that \$50,000, or less, worth of radio equipment may determine the effective utilization of 25, 30 or more millions of dollars of capital equipment, the real possibilities of mobile radio come into focus.

A survey which the Committee made in preparing to submit its petition to the Federal Communications Commission indicated that this development of integrating mobile radio into production planning had not been adopted on a wide scale, but it was indicated that such plans were in the making



H. E. Markley

by those companies who participated in the survey.

The exact wording from the petition is: "*Radio is used extensively on mobile equipment assigned for general transportation purposes in and about plant areas, where it performs the unique service of putting the supervisor or manager 'alongside' the driver of the vehicle. But even more significant installations are being developed by numerous manufacturing companies that are incorporating specialized and advanced types of radio systems into their assembly and production line operations.*"

To provide instantaneous radio communication integrated into productive operations is only possible with private systems on protected frequencies. Frequencies must be protected because the need for instantaneous communications is apparent. Waiting to transmit a message cannot be tolerated. Furthermore, the density of transmissions prevents sharing a frequency by two or more users. For example, our own company, by actual count, has recorded signals every 16 seconds on a 24-hour basis. It must be obvious that density of that order prohibits the sharing of any one frequency. In fact, many manufacturing users could improve efficiency with one or more additional frequencies.

Protection Needed

Our problem has been that up to a year or so ago there were very few who saw the need for protection, particularly since manufacturers were still in the primary stages of using radio. The number using radio frequencies did not produce any great number of interference situations.

There was no organized voice and some companies saw that very shortly manufacturing companies would have a serious need for radio frequencies that are, and will continue to be, free from destructive interference. In February, 1953, a number of companies meeting in St. Louis had the vision to see that there were very few frequencies available for manufacturers and that with the increased use which was appearing on the horizon, the time would soon be here when radio users would find its use seriously impaired.

All other major user groups of radio have organizations to present their views to the Federal Communications Commission. To mention a few, there are the railroads, the taxicabs, police, petroleum people, forest products people, relay press and motion picture users. All of these groups have presented an organized front to the Federal Communications Commission and have as a result been treated more favorably than manufacturers. So in that circumstance, the Committee on Manufacturers Radio Use was born.

There was a problem in the beginning to interest companies because it is always more difficult to visualize future problems than it is those presently with us. A radio licensee could not understand interference from another user in the same locality if he were fortunate enough not to experience it. Some users mistakenly assumed that if they were first in an area, the FCC would then not assign the same frequency to another user. Generally speaking, there has been no allocations study made by the FCC, and being the first

to use a frequency is no positive protection from further assignment to another in the same signal area.

Not Enough Frequencies

Manufacturers do not have enough frequencies for the use which is developing. We are presently included in a Special Industrial Radio Service. Frequencies in the 152-162 Mc band have been so far the most satisfactory.

We have five frequencies, one of which is low power. These frequencies, however, must be shared with other classes of users in the same service, such as construction people, ranchers, miners, and service groups. In addition to the five frequencies in the 152-162 Mc band there are 10 two-way frequencies in the 450-460 Mc band shared with many other groups of users. Operations in this band are presently restricted. Equipment is too large for many installations, it is expensive and some technical problems have been encountered. We have an experimental license in this 450 band and, although having some problems, see great promise for future use if these frequencies can be given protective status for manufacturer's use.

The Committee decided to approach the FCC on a cooperative basis after taking the view that the Commission genuinely wished to promote the use of radio and after an indication that the Commission would welcome such assistance as the Committee might provide in bringing to the attention of the Commission the problems that exist for manufacturers.

Much effort was expended to acquaint the Commissioners and the members of the Staff with the problems of manufacturers and this culminated in a demonstration put on by Thompson Products, Inc. and The Timken Roller Bearing Company to indicate partially with slides and partially with a working model of material handling in a steel mill just how radio is integrated into the productive processes. Shortly after this demonstration, which was held in Washington and attended by all but one member of the Commission, a number of interested Staff personnel and a large number of interested manufacturers, the Committee filed a petition asking for a Manufacturers Radio Service and the assignment of certain exclusive frequencies in the 460-470 Mc band.

The requests contained in the petition were denied completely by the Commission. It was indicated by the opinion accompanying the denial that to grant a service for manufacturers would be wasteful.

That the establishment of a service constituted a wasteful use was recognized by the Committee, but there has been a long-standing position of the Commission that it would grant exclusive frequencies to established services rather than to assign frequencies in what might be the most useful manner. The Committee petitioned for the establishment of a service because it fell within the framework of the policies which had been recognized by the Commission up to this time. So far as we know, this is the first evidence that the Commission has recognized the need for re-evaluating the assignment of frequencies in an effort to make them more useful.

(Continued on page 94)

● Here is the first article in another new FLOW series. Each month in these pages, some of the more significant new patents related to material handling will be reviewed. The reader can thus keep abreast of the latest developments almost as soon as they're off the drawing boards.

Self-Braking Conveyor Drive

A SELF-BRAKING conveyor drive has been devised to overcome difficulties in belt conveyor installations where, at times, the belt tends to overrun its drive. This may occur, for example, where both upgrades and downgrades appear in the same installation.

The drive is illustrated in Figure I. The upper run of the belt (1b) travels over a hump toward the motor-driven pulley (3). A take-up (4) is provided in the return run, together with a take-up weight. On the outgoing side of the take-up, the belt passes over a holdback pulley (6) and then to the tail pulley.

When the major portion of the load is on the upgrade stretch (not shown), the system operates con-

ventionally, with the upper run tensioned and the take-up operating in the slack tension, return run. But, when the feed at the tail end is shut down, and most of the load is on the downgrade stretch, the drive pulley is overrun and driven by the descending belt load.

The resulting tension in the upgrade stretch of the belt tightens the normally slack run, draws the belt out of the take-up loop and passes it into the upper run, which then sags or whips. Both the drive pulley and the holdback pulley, driven by the belt under the influence of the descending load, speed up and tend to overrun the motor.

A countershaft (10), which is coupled to the motor, tends to maintain its former speed and, consequently, there is a relative backward movement of the countershaft with respect to the drive pinion and holdback pinion. Such backward movement of the countershaft causes the holdback clutch to engage and to transmit the drive from the belt-driven holdback pulley to the motor.

Thus, the motor is driven by the holdback pulley and is speeded up to the point of functioning as a generator and exerting a braking effect on the holdback pulley. And, the lower run of the belt will be tensioned under the influence of the downgrade load back to, but not beyond, the holdback pulley.

U. S. 2,663,404, issued to Reinhardt Petterson and Leslie G. Weygandt, assigned to Hewitt-Robins Inc.

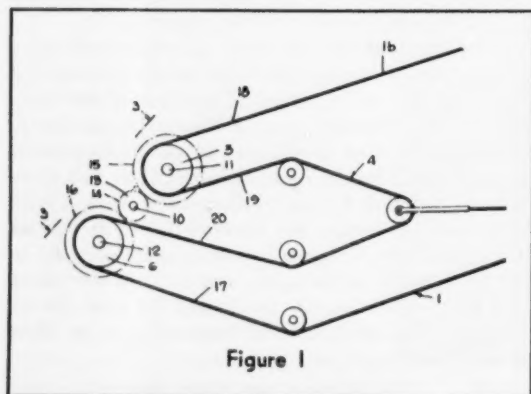


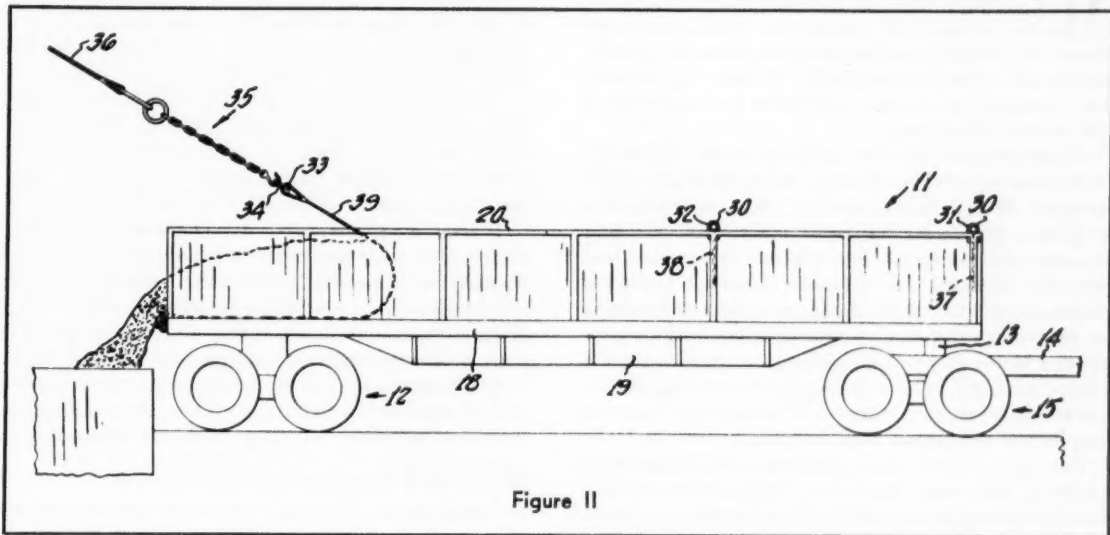
Figure I

Unloader for Nondumping Trucks

Nondumping truck bodies may be unloaded by the use of accessories dividing it into multiple compartments. Figure II shows a semi-trailer being unloaded through use of flexible sheets of canvas or similar material (37, 38, 39) which hang vertically to the floor of the trailer and extend to the end gate. Pairs of holes are made through the top surfaces of the side boards to receive heavy staples (30) which locate

curtain bars (31, 32, 33) in the body. Eyes (34) are secured to these bars to permit attachment of a sling hooked onto a hoisting cable. When the gates are opened, bars are placed through the ends of the curtains so that the rear of the curtain will not be pulled forward under the material being unloaded when the head of the curtain is pulled up.

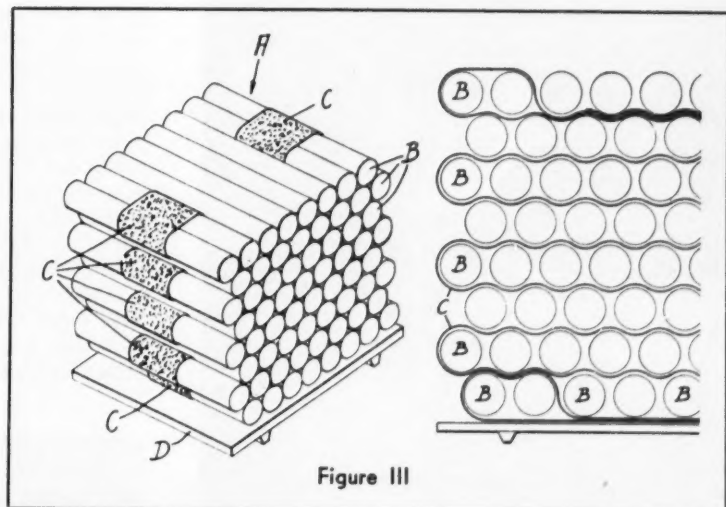
U. S. 2,662,650, issued to Lewis S. Russell.



Unit Loading System

Unit loads of cylindrical objects may be built up by interweaving a single binder element (C in Figure III) between the items (B). The load is generally built up on a pallet or skid (D), and the binder element may be a wide strip of strong paper. As shown, four of the cylinders at the top of the package act to lock the end of the binder element in place. The unit load may be moved readily and also can be stacked for economy in storage.

U. S. 2,662,649, issued to American Can Co., Willie Gill, inventor.



If a material will flow in a pipe, tube or hose, consider possibilities in . . .

Pump Handling Systems

There are intriguing possibilities in this compilation of fluids and "fluidized" solids—some very unusual—which are moved and metered by pump systems. Perhaps it lists materials similar to those you handle.

MANY and varied are the materials which, today, are handled by pumps, via tubes, pipes and hoses. And a good number are being metered, proportioned and mixed automatically so that requirements for close supervision and possibilities for human error are all but eliminated.

It has been said that if a material can be "fluidized" it can be pumped. This concept, which has been rapidly growing of late, is considered by some production engineers as one of the latest of material handling theories. Certainly, it exemplifies continuous flow. Actually, it is not new. Process industries have, for years, utilized all sorts of pumps, meters and mixers to turn out volumes of products astounding in proportion to the number of employees required. Cement plants, among others with tremendous production capacity, have pumped "liquified" solids that must be handled in continuous flow production.

But now we find plants handling with pumps such materials as paint (including high-percentage sand based), latex, glues and other adhesives, drugs of many kinds, whole fish (mostly live), whole fruit, bakery doughs and icings, gear coatings, suspended abrasives, printing ink, paper pulp, slurries of all types, tar and fibrated roof coatings, and molten metals. In fact, almost any material that will "flow"—even partially—

in a natural or prepared state can be pumped efficiently and economically. These are being handled to and from plant storage; to, between, and from production stages; to packaging departments and into containers.

Virtually every design of pump is suitable for handling some fluid and fluidized materials. Materials of which pumps are made, or with which they can be fitted, today, makes them suitable for handling even the most corrosive or abrasive of materials.

The three pump types (all "standards" for years) most widely used for material handling are the Centrifugal, Reciprocating, and Rotary. There are material handling jobs performed by the Deep Well, Deep Well Turbine and Regenerative Turbine designs. Of more recent development, and particularly well suited to handling some types of materials, are the Propeller and Pneumatic Ejector types. Then there are some special varieties for handling particular substances.

Metering Proportioning and Mixing

Developments in valves, meters and mixing devices have made it possible to control and measure most of the materials which can be flowed.

Volumetric meters (known as positive displacement type, volumetric displacement type, or piston type) are used to batch-measure a broad range of fluids. They will meter "normal" liquids those of high viscosity—like heavy oils—and an infinite number of viscosities which vary with temperatures. They are not used for liquids containing entrained solids or for slurries—any material out of which solids might settle if the liquid were not in motion for a time. The essence of a displacement type meter is that there must be very close clearances, or else washer packings, between the piston and the measuring chamber—and any build-up of solids, for any reason, would clog the action of the piston. This type of meter can be extremely precise, measuring batches within one percent accuracy or closer. It can also be used to measure corrosive liquids.

Orifice type meters are generally used on relatively large pipes, usually from 4 to 12 inches in diameter. Flow rate is determined by pressure drop across the orifice, and since rates of flow and pipe sizes are so



MOLTEN MAGNESIUM flows from one alloying pot to another at Dow Chemical via pump maneuvered on hoist. System is also used to fill casting molds.

great, they are not considered suitable for material handling in the "production" sense. Also, there's a limit to viscosity of liquids the meter will take.

Variable orifice type meters are not affected by viscosity. A knife edge on the meter float minimizes drag of the liquid so that the meter can handle high viscosities or suspended solids and slurries.

Metering pumps also can be used to measure fluidized materials. So many revolutions of the pump represents a given volume or weight of material.

The above types can be supplied in various metals and alloys to handle corrosives and abrasives.

The Electro-Magnetic flow meter is a new development. It permits the measurement of current-conducting liquids so that it can work with aqueous solutions, acids and other corrosives, slurries, emulsions, and liquids with solids in suspension. It will also meter molten salts and liquid metals—and high pressures, temperatures or high concentration of suspended matter are taken in stride. Accuracy is rated at one percent of full scale reading, but it is said that, under some conditions, accuracy to 1/2 percent can be obtained.

Mined Metals or Mince Meat

Although the subsequent chart indicates the extent of materials handled by pump systems, a few, widely divergent examples may help show the scope of pump applications in operation today.

At the Humphreys Gold Corp. plant in Jacksonville, where Florida sand is mined for the minerals it contains, much of the material handling is done by centrifugal pumps—in sizes ranging from the 16-inch dredge pump—that moves 500 T.P.H. through as much as 10,000 feet of 16-inch pipe—to the two-inch pumps used to feed a test spiral concentrator. The production concentrators are fed by pumps which take the sand from storage bins and elevate it to "splitters".

In many of the applications, rubber-lined pumps have proven very successful. One instance is where a six inch pump transports 150 T.P.H. of concentrated minerals and sand at 37 percent solids, through a six inch pipe, from a bin to dividing headers 25 feet above the pump. A box trap with a grizzly is installed in the suction line to catch tramp material which might damage the rubber lined parts.

A furniture factory has reduced wastage of valuable floor space, labor, and hazard by pumping paint from the first floor to the second, where it is piped to several booths. An old pressure pot located near the loading dock is utilized as a mixing tank.

At the Serley Company, putty is fed by pump, under pressure, directly from the drum to the operator who applies it to storm sashes. The system is said by the plant manager to provide a production capacity many times greater than that allowed by previous methods.

At an automobile plant in Los Angeles, a phosphate coating—applied to sheet metal before painting—is

MINCE-MEAT handled from kettle to canning hopper by rotary pump. Float control in hopper automatically starts and stops pump, which moves among kettles.

As we go to press—word about a giant pump-handling job has arrived. It is a 110-mile coal pipe line, from Cadiz, Ohio, to Cleveland, which may go into construction this summer. The system would pump a slurry of 50 percent coal and water probably to the Eastlake plant of the Cleveland Electric Illuminating Co., where 3000 tons will be consumed daily. It is thought that other users along the line might also be served. A loop test line built in 1951 is reported to have moved 7000 tons of coal per day.)

moved 40 feet from storage to point of application by a vertical turbine pump.

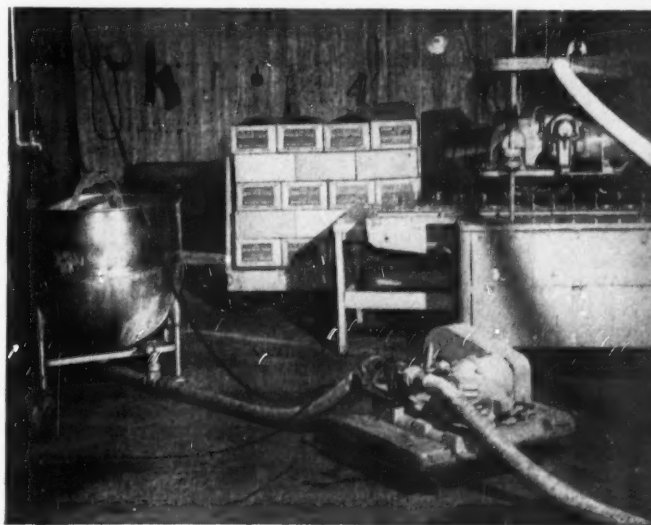
Fish (which can be up to 36 inches long) are handled from nets to holds (almost all arriving alive) to processing conveyors at the Trident Packing Company, Rockland, Maine, by pumps which move 80 bushels a minute.

Manual operation was too slow and costly for L. W. Rutherford, Lowell, Mich., firm which produces "Dining Car" brand mince meat. So, they obtained a two-inch, bronze, rotary pump, mounted on a casted base, to move their product from three processing kettles to the measuring unit on the canning line. A six-foot length of two-inch sanitary hose connects the pump with the bottom of a kettle, and a 20-foot length on the discharge side carries the hot mince-meat to the packaging equipment. Each of the kettles holds about 1000 pounds of product. The cycle of operations permits the pump to be moved from one kettle to another so that a new batch is always waiting to be pumped out for packaging.

These are not unusual examples of material handling by pumps; they merely represent the versatility and scope of the method.

The equivalent can be said for the accompanying chart. It is not a full collection of data on pumpable

(More on next page)



Pump Handling Systems Cont'd

materials. The intent is to show by examples from production experience the kinds of materials that pumping systems can handle.

For assistance with information and pictures, FLOW thanks the following firms:

Allis Chalmers Manufacturing Co.; The Aldrich Pump Co.; Aurora Pump Co.; Blackmer Pump Co.;

Bowser, Inc.; Buffalo Meter Co.; C. C. Pump Mfg. Div.; The DeVilbiss Co.; Walter H. Eagan Co., Inc.; Goulds Pumps, Inc.; The Hays Corp.; The Lee Healey Co.; Illes Power Control Co.; Johnston Pump Co.; The Kraissl Co.; Lincoln Engineering Co.; Penn Industrial Instrument Corp.; The Schirmer-Dorbirer Pump Co.; T. Shriver & Co., Inc.; Stewart-Warner Corporation; Viking Pump Co.; Warren Steam Pump Co., Inc.; and Yeomans Brothers Co.

"Pumpable" Materials and Equipment for Handling Them

Identification of Abbreviations

Type of Pump

C—Centrifugal
DW—Deep Well
DWT—Deep Well Turbine
P—Pneumatic Ejector
Pr—Propeller
Re—Reciprocating
Ro—Rotary
RT—Regenerative Turbine

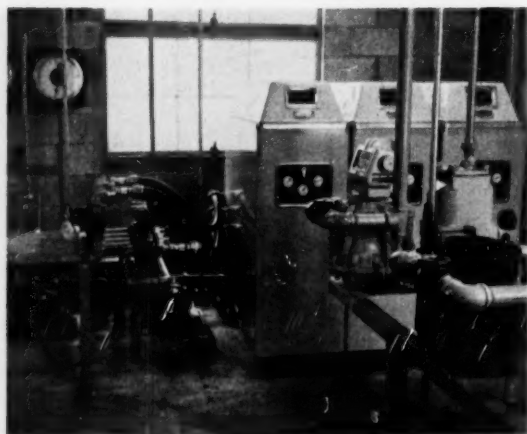
A—Aluminum Bronze
B—Bronze
Cr—Chromium
D—Dairy Metal
HB—Hastelloy B
HC—Hastelloy C
I—Cast Iron

Pump Materials

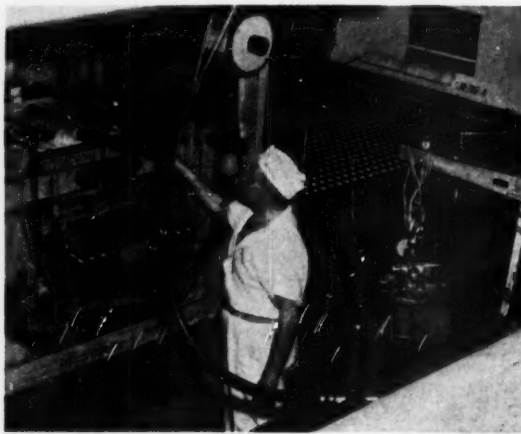
MA—Methyl Acrylate Plastic
MM—Monel Metal
MS—Manganese Steel
NiA—Nickel Alloy
SC—1113 or 1117 Steel
(case hardened)
SS—Stainless Steel

Material Handled	Type Pump	Pump Material
Abrasive liquid	C Re Ro DW DWT	SS SC MS Stellited Steel
Abrasives	C	MS
Acetaldehyde	C Ro	SS B HB HC
Acetate solvents	C Re Ro RT	A SS NiA B Cr
Acetone	C Re Ro RT	SS NiA B Cr I HB HC MA
Acids Acetic (Cold concentrated)	C Re Ro RT	A B C SS MM HC HB

Material Handled	Type Pump	Pump Material
Boric	C Re Ro RT	SS MA MM HC HB
Butyric	C Re Ro RT	SS MA NiA HC HB
Carbonic	C Re Ro RT	SS MA MM NiA HC HB
Citric	C Re Ro RT	B MA MM SS NiA HB HC
Fatty	C Re Ro RT	SS MA MM HC HB
Hydrobromic	C Ro	HB
Hydrochloric (cold)	C Ro RT	MA HB



EXPLOSIVE and flammable solvents arrive in tank cars and trucks at Marathon Corp., are pumped to storage tanks, metered and mixed, then distributed by pumps.

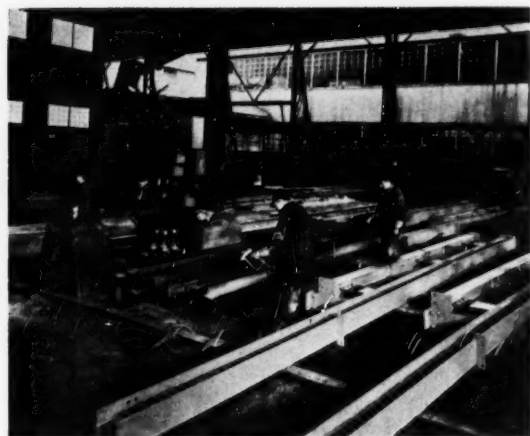


COOKIE dough delivery by pump, from mobile tub to machine, is more sanitary than hand loading, reduced operators from 2 to 1, paid for itself in 75 days.

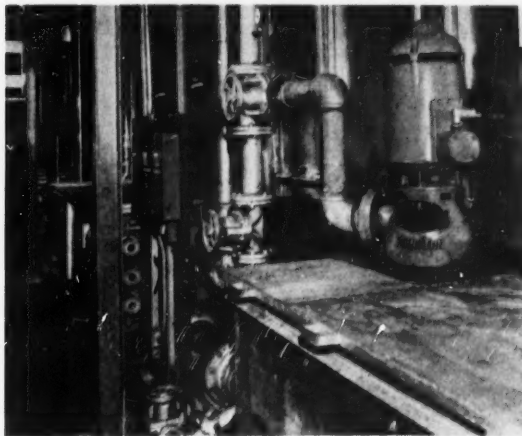
Material Handled	Type Pump	Pump Material
Hydrochloric (hot)	C Ro	HC
Hydrofluoric	C Ro	MM MA HB
Nitric all conc. trates	C Ro Rt	SS
Phosphoric, dilute	C Ro RT	SS HB HC
Pyroligneous	C Ro	SS
Pyrogeilic	C Ro	B MA MM SS NiA HB HC
Sulfuric 10% (boiling)	C Ro	NiA HC HB
Sulfurous	C Ro	B MA SS HC HB
Tannic	C Re Ro RT	A B SS MM MA HC HB
Tartaric	C Ro RT	B MA SS HC HB
Alcohols (Ethyl & Methyl)	C Re Ro RT	A SS B NiA Cr MM HB HC
Alum	C	SS NiA MA HC
Aluminum chloride	C Re Ro	MA HB
Aluminum hydroxide	C Re Ro	I MA SS MM NiA HB HC
Ammonia, Aqua	C Re Ro RT	SS Cr NiA SC
Ammonium, carbonate	C Ro	I MA SS MM HC
Ammonium hydroxide	C Ro RT	B Cr SS I MA MM HB HC
Aniline dyes	C Re Ro RT	NiA SS MM HB HC
Aniline hydrochloride	C	B I MM HB HC
Antimony trichloride	C	I
Asbestos	C Re	I SS
Ash, fly (in water)	C	MS
Asphalt, hot	C Re Ro	A SS NiA B Cr I SC
Barium chloride	C Ro	MA NiA HB HC
Barium hydroxide	C Ro	I MA SS MM NiA HB HC
Bean sauce	C Re	SS
Beans, navy and lima	Pr	SS B

Material Handled	Type Pump	Pump Material
Beer	C Re Ro	A B MM HB HC SS SC
Beet sugar refuse	C Pr	B
Benzene	Re Ro	I B MA MM HB HC SS SC
Black liquor	C Ro	I
Blood, animal	Re Ro P	SS NiA B Cr I
Brine	C Ro	B
Calcium chloride	C Ro	SS NiA B Cr I
Sea Water	C Ro	SS NiA B Cr
Sodium chloride	C Ro	B I
Butane	C Ro	I B
Buttermilk	C Re Ro	MA MM SS NiA HB HC SC
Butyl Acetate	C Re	SS
Calcium chloride	C Ro	B MA SS HB HC
Calcium hydroxide	C Ro	I MA SS NiA HB HC
Calcium hypochlorite	C Ro	MA HC
Calcium sulfate	C Ro	I B MA MM SS HB HC
Cane juice	C Re Ro	A B
Caramel	Ro	D
Carbonated beverages	C Re Ro	MA SS MM NiA HB HC
Carbon bisulfide	C	I MA SS NiA HB HC
Carbon tetrachloride	C Ro	A SS NiA B Cr MM HB
Catsup	C Re Ro	SS NiA B MA SS MM HB HC
Caulking compounds	Re Ro	SS SC I
Caustic soda solution	C Re Ro RT	SS NiA B Cr SC
Caustic soda, fused	C Ro	SS MM NiA HC HB
Cellulose acetate	Ro	SS NiA B Cr
Cellulose jelly	Ro	SS
Cement	Pr	I
Ceramics	P Re	I
Cherries (in water)	C (Trash)	SS D

(More on next page)



RED LEAD and zinc chromate, stored hundreds of feet away, are pumped to operating personnel of steel fabricator. Note regulators between column supports.

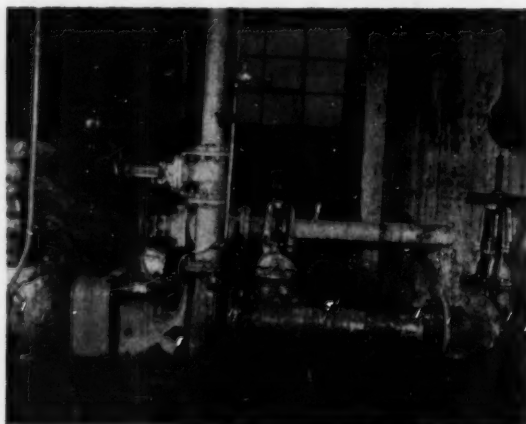


PHOSPHATE coating solution is pumped from central storage to distant spray nozzles for treating sheet metal auto parts before painting at assembly plant.

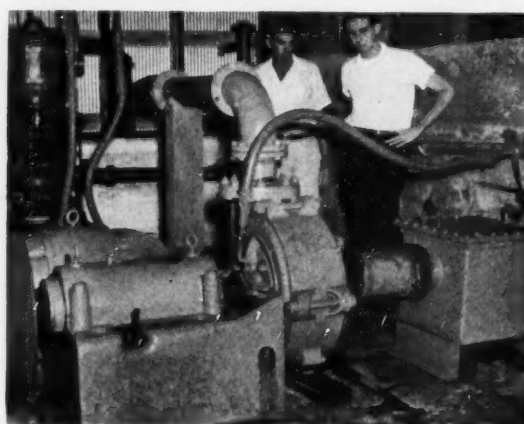
Pump Handling Systems Cont'd

Material Handled	Type Pump	Pump Material
Chili con carne	C (Trash) Re	SC SS D
Chocolate	C Re Ro	SS SC I B
Chlorine, anhydrous	C	SS NiA B Cr HC
Chlorine, plus water	C Re	HC
Chloroform	Re Ro	A SS NiA B Cr MM HB HC
Clams	C	D
Clay, liquid	Re Ro	I
Coal tar by-products	Re Ro	I SS
Cocoa butter	C Re Ro	D SS
Copper precipitated	C	MA
Copper chloride	C Ro	MA HC
Copper nitrate	C Ro	SS
Copper sulfate	C Ro	MA SS HC
Copper sulfate plus H ₂ SO ₄	Ro	HB HC
Cosmetics	Re Ro	SS Cr I B
Cottage cheese	Ro	D
Cottonseed oil	C Re Ro	I B MA SS MM NiA HB SC HC
Cream filling	Ro	B SS SC D
Cream of tartar	C	D
Creosote	Re Ro	MM SS NiA HC I
Cresol	C Ro	SS MM NiA HB HC
Diatomaceous earth	Re	I
Dichloroethane	C Ro	B MA SS MM NiA HB HC
Diethylene glycol	C Re Ro	I B SS MM NiA HB HC
Diphenyl oxide	C	I
Dough, bread, biscuit, etc.	Re Pr	SS I D
Dyes, aniline	C Re Ro	MM SS HB HC
Enamel	C Re Ro	A SS NiA B Cr I SC
Ethers	C Re Ro	B SS MM NiA HB HC

Material Handled	Type Pump	Pump Material
Ethyl chloride	C Ro	B SS MM NiA HB HC
Ethylene dichloride	Ro	A SS NiA B Cr
Fats, edible	Re Ro	MA SS MM HB HC I B
Ferric acetate	C Ro	A B NiA SS
Ferric chloride	C Ro	MA
Ferric ferrocyanide	C Ro	A NiA B SS
Ferric nitrate	C Ro	NiA SS
Ferric sulfate	C Ro	MA HC
Ferric sulfate plus 10% H ₂ SO ₄	C Ro	HC SS
Ferrous chloride	C Ro	MA
Ferrous sulfate	C Ro	MA HB
Fertilizer (NH ₃)	P Ro	I
Fish (in liquid)	C (Trash) Pr Ro	I
Foamite	C	HC
Formaldehyde	C Re	SS Cr I
Freon	Re Ro	SC I (with Mech. seal)
Fruit fillings	Re Ro	B SS
Fruit juices	Re Ro	SS NiA B MM HB HC
Furfural	C	A SS B I MM HB HC
Gases, liquified	Ro	HC
Ammonia	C DW Ro	I
Carbon dioxide	C DW Ro	I
Gasoline	C Re Ro	B I SS SC
Gelatine	C	I B MA MM SS NiA Cr HB HC
Glucose	C Re Ro	I SS
Glue	C Re Ro	B I SC SS
Glycerin	C Re Ro	A B SC SS
Grease	Re Ro	I SC SS



CAUSTIC-sodium sulphite and carbonate solution (150 deg. F.) is delivered from dumping vat to mixing tank by pump (550 GPM) at Green Bay Paper & Pulp Co.

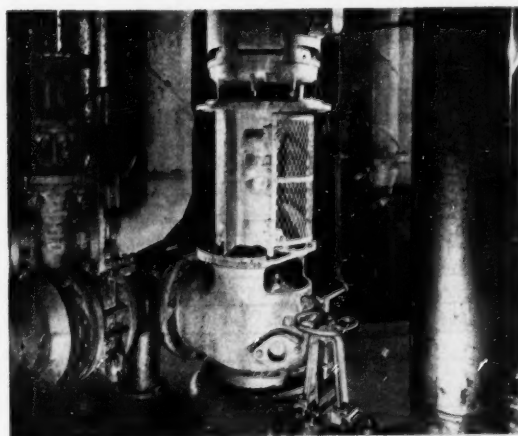


FINE SAND, 45 percent of solution, pumped by Humphreys Gold Corp. at 118 tons per hour, 46.2-ft. head. Rubber linings replaced without moving pump.

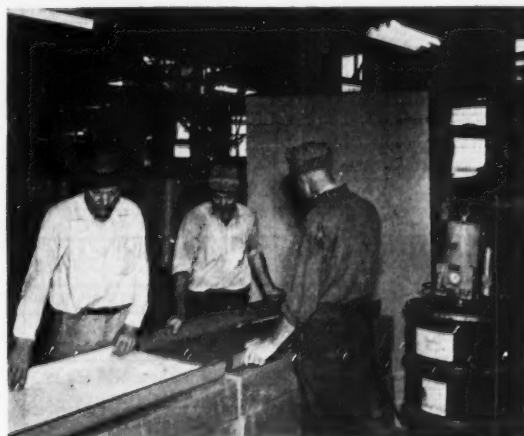
Material Handled	Type Pump	Pump Material
Heptane	Ro	A I
Honey	P Re Ro	D B SC SS
Hydrogen peroxide	C	A NiA High silicon iron
Hydrogen sulfide solutions	C Ro	MA SS HB HC
Hypo	Re	SS
Ice cream	C Ro	B D SS
Icings	Re Ro	SS SC B D
Ink, printing	C Re Ro	SC SS I
Iodoform	C Ro	SS MM NiA HB HC
Jams	Re Ro	SC SS B I D
Jellies	C Re Ro	SC SS D
Juice, fruit, tomato, vegetable	C Ro Re	SC SS D
Kerosene (coal oil)	C Re Ro	SS NiA H I High-silicon-iron SC
distillate	C Re Ro	I
Lanolin	Re Ro	I SC SS
Lacquers	C Re Ro	B MM SS NiA HB HC SC
Lard	Re Ro	A I SC SS
Latex	Re Ro	I SC SS
Lead, acetate	C Ro	SS
Lead, molten	DWT Ro	I
Lead nitrate	C Ro	SS
Lead, sulfide	C Ro	SS
Lime, milk of	C Ro	I
Linseed oil	C Re Ro	I BB SS NiA HB HC SC
Magnesium chloride	C Ro	B MA NiA HB HC
Magnesium sulfate	C Ro	A I B MA MM SS HB HC
Manganese chloride	C Ro	B MA MM SS HB HC
Mash, malt	C Re Ro	B
Mayonnaise	P Re Ro	B D SS MA MM NiA HB HC SC

Material Handled	Type Pump	Pump Material
Meat packing by-products	P	I
Melamine resins	Re	MA HB HC
Mercuric chloride	C Ro	MA
Mercuric nitrate	C Ro	SS
Mercuric sulfate	C Ro	SS
Mercurous sulfate	C Ro	SS
Mercury	C Ro	I SS HB HC
Metals, molten	C Electro-magnetic	
Milk	C Re Ro	D MA SS NiA HB HC SC
Milk, condensed	R Re	SC SS
Mine water	C Ro	B SS
Molasses	C P Re Ro	A I B SS MM NiA HB HC SC
Mustard	Re Ro	B NiA MM NiA HC SC SS
Naptha, refined	Re Ro	A I B SC SS
Napthalene	C Re Ro	I SS MM NiA HC SC
Nickel chloride	C Ro	MA HB HC
Nickel sulfate	C Ro	SS MA HB HC
Nitrobenzene	C	A SS NiA HB HC
Oil, heavy	C DW Re Ro	I B S SC SS
Oil, light	C DW Re Ro	A I B SC SS
Oil, vegetable	C Re Ro	MA MM SS NiA HB HC SC
Oil well sludge	Ro	I
Oleum	C Re Ro	I SS HB HC SC
Paint, oil	C P Re Ro	SC SS
Paint, water base	C Re Ro	SC SS
Paper pulp and refuse	C Re	NiA SS
Peanut butter	Re Ro	D SC SS
Peppers	Ro	D
Perfume	C Re	SC

(More on next page)



PAPER stock pumps handle material from high density storage to screens at Thilmany Pulp & Paper Co. Feeder vane assembly disperses slugs prior to impeller.



GLUE which secures insulation pads on panels is pumped direct from drum through 10-ft. hose. Labor costs were cut 30 percent over old brush & pail method.

Pump Handling Systems Cont'd

Material Handled	Type Pump	Pump Material
Phenol	C	A SS MM NiA HB HC
Phosphorous, melted	C	B I
Pineapple pulp and refuse	Pr	B
Phosphate coating solutions	C Re	SS
Pickle liquor	C Re	SC SS
Plastics, liquid	Re	I SC
Potassium bisulfate	C Ro	SS
Potassium bromide	C Ro	B MA HB HC
Potassium carbonate	C Ro	A I MA SS NiA HB HC
Potassium chlorate & H ₂ SO ₄	C Ro	HC NiA SS
Potassium chloride	C Ro	I B MA HB HC
Potassium cyanide	C Ro	I B MA HB HC
Potassium hydroxide	C Ro	SS MM NiA HB HC
Potassium permanganate	C Ro	I MA SS MM NiA HB HC
Potatoes, mashed	C	D SS
Propane	Re Ro	I SC SS
Pulp, bean	C Re	I SC SS
Pyridine sulfate	C	A
Refrigerant	Re Ro	I SC SS
Roof coatings, fibrated	P Re	SC SS
Rosin	Ro	I
Rubber stock	C Ro	I
Sand, construction & foundry	P	Steel, rubberlined
Sausage stuffing	Re	I SC SS
Sewage	C (Trash) DW DWT P Re	I B
Shortening	Re Ro	B I SC SS
Silicate of Soda	Ro	I
Sizing	C Re Ro	I SC SS
Slip clay	C Re Ro	I
Sludges	C P Re Ro	SS NiA HB HC
Slurries	C Re Ro	I SC SS
Soap	C Re Ro	A B I SC SS
Soda ash	C Ro	I
Sodium bicarbonate	C Ro	A SS NiA Cr B MA MM HB HC
Sodium bichromate	C Ro	SS
Sodium bisulfate	C Ro	MA HB HC
Sodium bisulfite	C Ro	B MA SS HB HC
Sodium chloride	C Ro	I B MA MM NiA HB HC
Sodium cyanide	C Ro	I MA SS NiA HB HC
Sodium hydroxide, cold dilute	C Ro	A I SS MM NiA HB HC
Sodium hydroxide, hot 20%	C Ro	A SS MM NiA HB HC
Sodium hypochlorite	C Ro	MA HB
Sodium nitrate	C Ro	I MA SS NiA HB HC
Sodium perborate	C Ro	MM SS HC
Sodium peroxide	C Ro	SS MM HC

Material Handled	Type Pump	Pump Material
Sodium phosphate, tri-	C Ro	I MA SS MM NiA HB HC
Sodium silicate	C Re Ro	I MA SS MM NiA HB HC
Sodium tetraborate	C Ro	I MA SS MM NiA HB HC
Sodium thiosulfate	C Ro	SS MM NiA HB HC
Sound deadener	Re	SC SS
Stannic chloride	C	SS NiA
Stannous chloride	C	NiA SS
Starch	Ro	B MA SS MM NiA HB HC
Stock	C Re	I B
Sugar solutions	Re Ro	I B MA MM SS NiA HB HC
Sulfite liquors	C	NiA SS
Sulfur, molten	C Ro	I MM HB HC
Sulfur dioxide, anhydrous, liquid	C	I MM SS HC
Sulfur dioxide (wet)	C	SS
Syrups, fountain	C Re Ro	SC SS
Tailings	C	A
Tallow, hot	P Ro	I
Tanning liquors	C Re Ro	I SC SS
Tar	Re Ro	I SC S
Tar and ammonia	Ro	I
Tetraethyl lead	C	A NiA HC SS
Toluol	C Re Ro	A I B SS MM NiA HB HC SC
Tomatoes, pulp and refuse	C Ro	D SS
Trichlorethylene, anhydrous	Ro	A I B SS MM NiA HB HC
Turpentine	C Re Ro	A I B MA MM SS NiA HB HC SC
Varnish	C Re Ro	A I B MM SC SS
Varnish Stein	Re Ro	B MM NiA HB HC SC SS
Vinegar	C Re Ro	A MM SS NiA HB HC B
Water		
Chlorinated	C DW Re Ro	I SC SS
Distilled or deionized	C Re Ro	MA MM SS HB HC SC
Filtered	C Re Ro	B (fitted) SC SS
Mine	C	B
Muddy	C	B
Raw	(all)	B (fitted)
Sea	(all)	B
Softened	C Re Ro	B (fitted) SC SS
Wax	Ro	I
Whiskey	C Ro	B SS MM MA SS NiA HB HC
Wine	C Ro	B
Wood	C Ro	NiA SS
Zinc chloride	Ro	MA HB HC
Zinc sulfate	Ro	MA SS MM HB

Industry and Colleges Combine

To Advance Science of Handling

CREATION of a proper awareness of material handling problems in industry and proper training of a sufficient number of men to cope with them are the principal objectives of the sixteen recently appointed members of The College-Industry Committee on Materials Handling Education.

Under the joint sponsorship of the Material Handling Institute (the Industry's leading trade association) and the American Material Handling Society (the Industry's leading professional group), The College-Industry Committee comprises representatives of eight of the nation's leading engineering colleges—representatives of users of materials handling equipment and accessory products, and—representatives of manufacturers.

Educators Offer Services

This Committee, as named by C. E. Elledge (General Electric), new President of the M.H.I., will work under the chairmanship of Dr. Spencer A. Larson, Director, Materials Management Center, Wayne University. Other educators named are:

Harold T. Amrine, Associate Professor and Chairman of Industrial Engineering, Department of General Engineering, Purdue University; James M. Apple, Associate Professor and Chairman, Industrial Engineering Section, Michigan State College; W. Van Alan Clerk Jr., Professor in the School of Industrial Management, Massachusetts Institute of Technology; George E. Hagemann, Professor of Industrial Engineering, Department of Mechanical Engineering, New York University; John R. Huffman, Associate Professor, Department of Industrial Engineering, University of Southern California; Byron W. Saunders, Associate Professor, College of Engineering, Cornell University; and Frederick E. Winter, Associate Professor, Department of Industrial Engineering, Columbia University.

Users Represented

Members representing users are: Vincent J. Reade, assistant to Executive Vice-President, Whitehead Metal Products Company, Inc.; George A. Smith, International Business Machines, Inc., and President, Ameri-

can Materials Handling Society; A. K. Strong, Material Handling Division, American Cyanamid Company and past president, A.M.H.S., and Irving M. Footlik, material handling consultant and instructor in Material Handling, Illinois Institute of Technology. Mr. Footlik, with headquarters at 8444 South Yates Ave., Chicago 17, Ill., has been set up as the Committee's paid secretary.

Equipment and accessory manufacturers are represented on the Committee by D. H. Bitney, Vice-President, Union Steel Products Company; Edward W. McCaul, Sales Manager, Jervis B. Webb Company; Walter E. Schirmer, Vice-President, Clark Equipment Company; J. W. Wunsch, President, Silent Hoist & Crane Company, and Howard M. Palmer, Vice-President, Lewis-Shepard Company, and past-president, The Material Handling Institute.

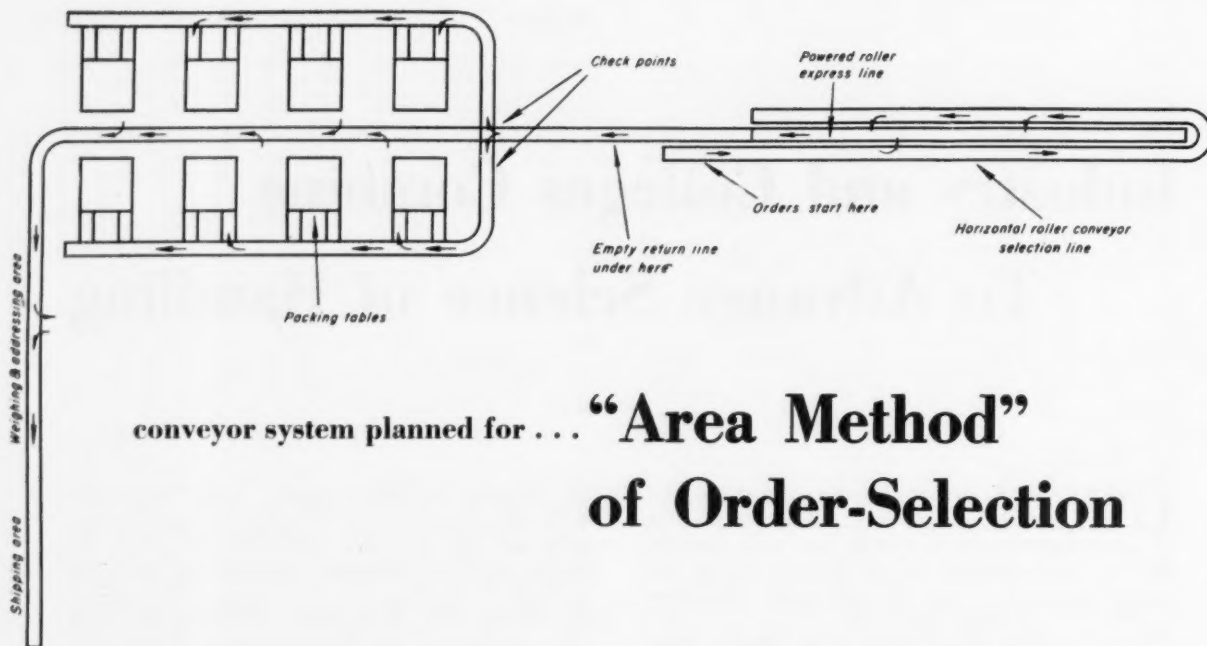
As a means of achieving these objectives, the Committee has established a program of activities, among which are: sponsorship of seminars, conferences and printed material handling literature; review of manuscripts or other proposed material-handling literature; publication of a Newsletter to Material Handling people in education.

Projects Under Way

Already well into the planning stage are these specific projects: An inventory of progress in Material Handling education; development of strictly educational films on Material Handling; establishment of scholarships and prizes; consideration of curricula for various types of educational instructions; committee review of manuscripts and joint activities with professional societies and other special-interest groups.

Not listed specifically as an "objective"—but mentioned often by the most enthusiastic proponents of education as a prime factor in the advancement of material handling methods, equipment, accessories, and their employment—is the establishment in the country's best engineering colleges and universities of degree-granting curricula in Material Handling. The production of adequate text material in this field is, really, a step toward the formulation of such curricula.

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conveyor system planned for . . . **"Area Method"** of Order-Selection

INABILITY of an old, multi-story building to put out an ever-increasing number of orders, plus the parking and traffic problems of the city, caused the move of the Parke-Davis Company—one of the nation's foremost pharmaceutical manufacturers—from New York to Teterboro, N. J. There the firm moved into a modern plant with a brand new handling system that would keep pace with all anticipated production demands.

The fully conveyORIZED installation shown in the sketch and pictures was developed by Frank Henry, Rapistan Sales Engineer, working with Charles Linden

and Ed Wulff of Parke-Davis. It covered the following, required salient principles:

1. The "Area Method" of order selection, in which each picker is assigned to an area for which he is responsible. He covers those items of each order that are in his area, restocks his selection bins from the reserve areas directly behind them, and is responsible for the housekeeping in his section.

2. The system should utilize the low cost of unit receiving and stocking and the high speed efficiency of a conveyor flow selection system.

3. A minimum of walking. Stock to be parallel to conveyor lines; a fixed checking point; short, three-point movement of packers between waiting line, packing table and shipping line—all designed to reduce worker fatigue and increase efficiency.

4. A "closed system," eliminating any need for trucking of empty order boxes, cartons, etc., to the point of reuse.

Unit Handling from Receiving

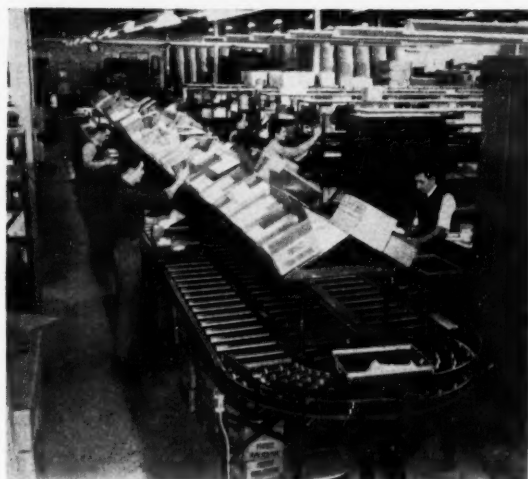
As goods are received they're palletized and brought into position behind the proper selection bins. (Parke-Davis is currently investigating the possibilities of receiving by pallet load to produce even greater savings.) Bins are restocked by order pickers during slack times. Orders are printed on selection sheets by a punch-card system.

Number one picker receives the order and places it in a fibre order box taken from the "return empty" roller gravity line beneath the selection line. He places the box on the horse shoe shaped, horizontal, roller-conveyor selection lines and puts in it those items in his area. The box, with the selection slip in it is then pushed along the line to the next area. This continues until the order is completed.



**FLOW'S
GUEST
EDITOR**

INTRODUCING . . . T. C. (Tom) McGow, FLOW'S third Guest Editor and Manager of Rapistan of New Jersey, Inc., distributor of material handling equipment with office and warehouse in Chatham, N. J.



ASSEMBLY area, where orders start at far left end of roller line and move counter-clockwise. Center line is live "express" for finished orders. Additional width at right is for biologicals, other items requiring registration. "V" shelving stores small, fast moving items.

The man completing the order slides the box over the gravity roller onto the adjacent, powered-roller "express line," where it is whisked down to the checking area for accumulation on roller gravity conveyor.

It will be noted that, throughout the system, the judicious use of power, gravity, and horizontal conveyor allows items to remain still while work goes on, to accumulate before each operation, and still move rapidly between stages.

After checking the finished order, the checker diverts a box to either side onto one of two packing accumulation lines. The packers divert orders over to the packing table, pack them, and place cartons on the central, out-going gravity wheel conveyor line. Empty tote boxes are placed on the lower line for return to the selection area.

Packaged orders travel down the gravity wheel conveyor line to the shipping area where they are removed from the line, weighed and processed according to manner of shipment. They are then returned to the line and proceed to the ready area.

Waste and Expense Items Eliminated

In the Parke-Davis Company, both management and employees feel the new system is a definite improvement over the previously used truck picking method. It is felt that a higher volume can be obtained with the present system as demand increases. Now, six order selectors (including one biological room man) are required—as compared to the 11 formerly needed. More floor space is available for storage because of the elimination of trucks and floor maintenance and truck repairs are two expense items deleted. The constant flow of orders to the packing and shipping areas permits a steadier, more efficient working pace than the old method that brought orders to these departments in "slugs," with wasted time between. House-keeping is greatly improved, also, since each man is responsible for a definite area.

CHECKING and packing areas, where orders are checked on roller line center right, then diverted to either side of packing tables. Wheel section in foreground holds orders requiring correction.



IN SHIPPING area, orders arrive via gravity wheel line, packages are weighed, addressed, stamped, etc.; case lot items, if any, are added; and full order is returned to line for conveying to truck bays.



SMALL PARTS area is encircled by continuous drag-line conveyor. Orders are assigned workers from a

central dispatching area in the warehouse. Pre-addressed labels accompany each order, speed shipment.

“Synchronized Experimentation”

. . . Improves Ford Depot Operations

EXPERIMENTATION with ideas can be economically preformed in any warehouse, if the handling principle is sound and well applied. Ford Motor Company has proved this theory in its application of a “Best Methods Program” incorporating the development of new ideas and techniques on a national scale with twenty-five Ford Division Parts Depots participating. Each benefits from the overall effort to provide the most efficient means of operation.

The parts depot system is one of the major links in Ford's coast-to-coast sales and service system designed to provide faster and more economical service to Ford owners. Development of faster and more efficient receiving, storing and shipping systems is one of the keys to better balance of dealer parts stocks and faster service to dealers and the public on critical repair items.

To obtain the results desired, experimentation and development work is carefully controlled by staff operations. Under this well coordinated program, any operational benefits realized through the adoption of a new system, method or technique in any depot can be immediately put into effect nationally. Development of this so called “synchronized experimentation” has

produced very satisfactory results in building a group of extremely well organized parts depots.

Basic Standardization

Peculiar to this organization is an overall basic standardization utilized in plant layout, equipment and operating methods. As an example, standard architectural design is used on all new structures. Typical of the buildings constructed since postwar expansion is the Cleveland Depot, which is a single story structure containing 162,000 square feet. Included in these facilities are 18,000 square feet of modern office space and 144,000 square feet of warehouse space.

Building characteristics integrate themselves directly into the operation by providing for mechanized dock levelators, pneumatic tube systems, sub-floor drag link conveyors, and many other features developed to provide a modern concept of efficient warehousing. Post war expansion has produced seventeen such depots located in major distribution points such as Atlanta, New York, Chicago, Detroit, and Los Angeles. These depots range in size from 105,000 square feet to 1,000,000 square feet, all being single story operations.

In line with national improvement and development,

INCOMING LOADS are quickly stacked on floor trucks or pallets. Parts which cannot be immediately stocked are moved to adjacent temporary storage.



older locations have been revamped to incorporate many of these new features.

Equipment has played a major role in the progress of this vast program. Through continuous experimentation, standard equipment components have been developed which best suit the methods employed. Various types of storage bins and racks have been designed and developed to handle approximately 15,000 different parts warehoused, varying from spark plugs to chassis frames. This step alone has produced substantial savings in handling and stockkeeping, not to mention the intangible benefits realized through greater cubic overall utilization of warehouse space.

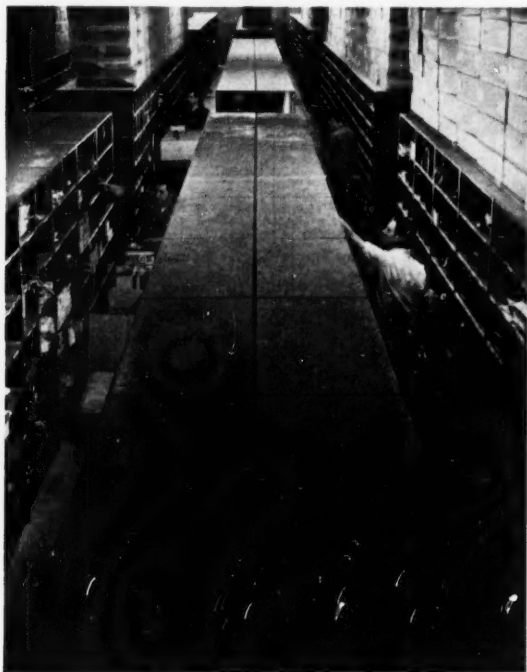
"Custom Storage"

At the present time, great strides are being made with new storage equipment lending itself to "custom storage" yet flexible enough to handle annual styling changes which, in the past, has been a major problem to the industry. New depots in New York and Chicago, at the present time, are part of this development phase, utilizing custom storage for hard-to-handle parts. Since satisfactory results are being obtained, other locations will soon profit from these advances by employing similar equipment.



This only highlights the progress that has been made in developing and standardizing equipment used in producing the degree of efficiency ultimately desired. Under this program, depots are utilizing standard 48" x 48" pallets, 3' x 6' flat bed trailers, pickers, trucks, and trash trailers, all with drag link accessories. Fork trucks and walkie trucks are also used. These are only a few of the many new developments that have assisted materially in producing a fine degree of work

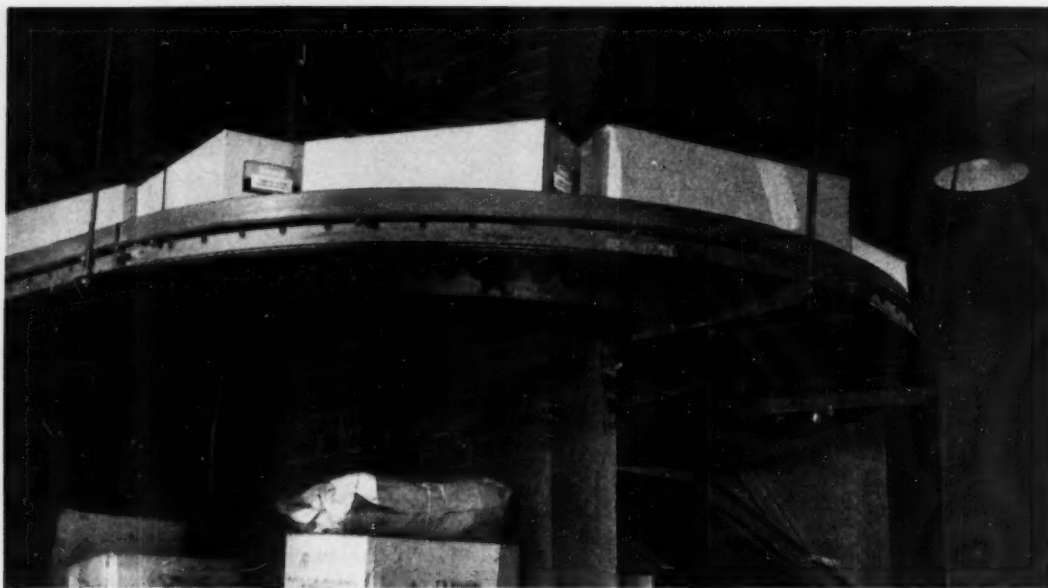
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ORDER SELECTORS with floor trucks travel in the same direction. This one-way traffic speeds selection, eliminates confusion and permits narrow aisles.



COMPLETED ORDERS are re-hooked onto the tow-line and travel to the shipping department for final packing, weighing and shipment. Efficiency is routine.



ROLLER CONVEYOR swings cartons around a 180-degree turn and places them on a chute to a re-

ceiving table. From the table the cartons go to shelves in finished stores, are later shipped.

NEW SPEED FOR AN OLD PLANT

By
E. A. Necker

Methods Engineer
Thermoid Company, Trenton, N. J.

CONFRONTED by a highly complex material handling problem, our engineers have adapted modern methods in a plant where some of the buildings date back 70 years.

Like many other manufacturers, we have had to adapt the conveyor system to conform to the contours and construction of outmoded buildings and a wide range of products.

Our products originate at rubber extruders and find their devious ways to the shipping dock. Enroute, the rubber is subjected to numerous processes, such as cutting, wrapping with cloth, cooling, inspection and packaging.

On the second floor, at the extreme end of one building, the extruding machines for both bent and wrapped hose connect with conveyors which carry extrusions at alternate times for both these products.

As tubing for wrapped hose is extruded, it is cut into 50-foot lengths and fed onto a belt 6 inches wide on 50-foot centers. The belt is at the back of a long fabricating table. Running at slow speed, it is synchronized with the rate of extrusion. When each length is

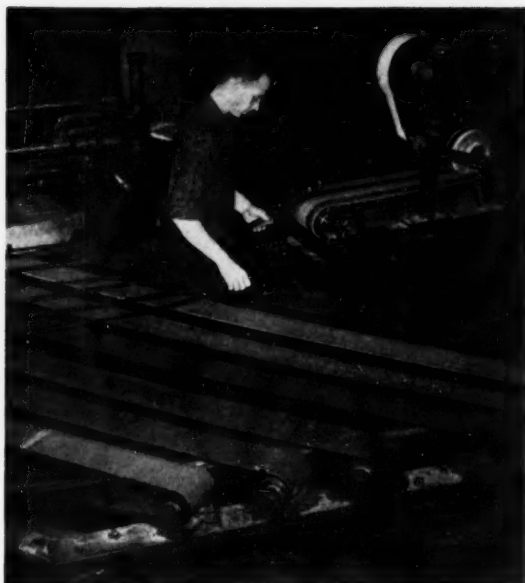
extruded, the belt is stopped, the tubing is cut and rolled off the belt onto the table.

To meet demands for shorter lengths, the 50-foot sections are fed into a cutting machine. Some shorter lengths are conveyed by a 4-inch wide belt on 125-foot centers to the inspection and stores department in another building. Most of the belt runs in open air between the second stories of the two buildings and is covered to protect it against sun and rain.

Guides Sort and Divert

From the cutting machines other short lengths are dropped by gravity chutes to one of two conveyor belts suspended from the first floor ceiling. Guides on the belts divert the hose, according to size, into bins.

Another belt in the wrapped hose department runs at right angles to the initial belt conveyor. It is 42 inches wide on 25-foot centers. On this, finished hose in coils and bundles moves to a gravity chute to the inspection department. The belt is elevated to carry the hose over the working tables and under another,



SEVEN PARALLEL narrow belts carry cotton strips from a cutter bar. The bar cuts them on a bias from rubber impregnated cotton duck. The operator sticks them together end to end, making a continuous roll.

long belt which carries tubing to the bent hose department.

The bent hose department is in an adjoining building. When tubing is being extruded for this department it is fed onto an 8-inch wide belt on 220-foot centers. The belt starts 45 inches from the floor, rises to 7 feet, and drops again to the original height. This belt is suspended from the ceiling.

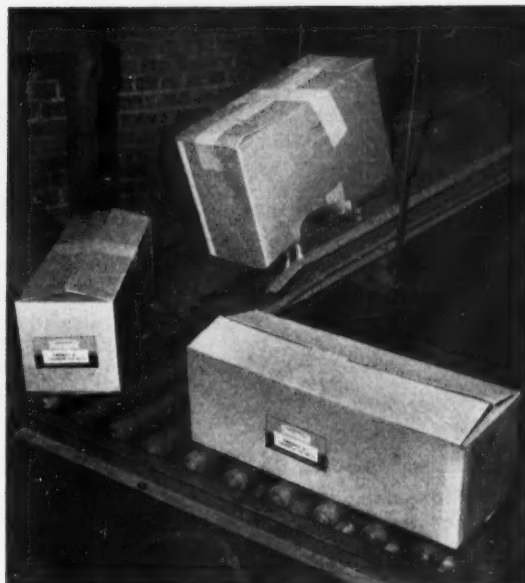
Extruders also feed into a "tuber." Extruded rubber for the inside tubes of hose is cooled in a tank of water, coated with zinc stearate to eliminate stickiness, and carried up from 3 feet to 6 feet off the floor. The operator removes excess dust on the tube and coils it onto a revolving wooden disc.

Curing of the tubing involves covering it with lead and heating it in an oven. After curing the lead is stripped off and returned to the melting pot by means of two metal chutes, a conveyor belt to which are riveted 48 metal buckets, and two other conveyor belts. On an 8-hour shift, 90,000 pounds of lead can be handled.

Extruded rubber for automotive and industrial V-belt is wrapped in rubberized cloth, and vulcanized. Rubberized fabric, before wrapping, is cut on a bias into strips. Rolls of fabric, 42 inches wide, are fed by seven parallel 5¼-inch conveyor belts to a cutter bar which shears at an angle to the warp of the cloth.

The strips drop onto another set of seven parallel conveyor belts and are transferred by an operator to an 8-inch wide belt conveyor on 38-inch centers. The belt is controlled by a foot pedal as the operator sticks the strips end to end. The strips are taken up onto a

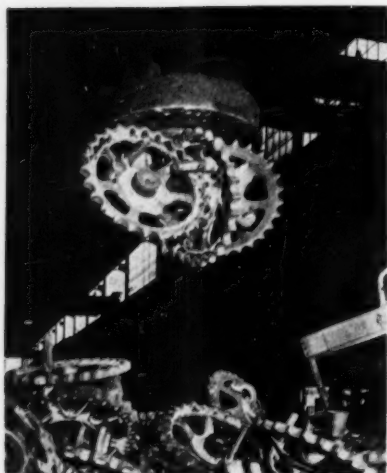
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CARTONS SEALED in plastic envelopes are started on their way to finished stores over a combination of belt and roller conveyors. The cartons are delivered to the roller conveyors by way of a molded surface belt.



SPECIALLY DESIGNED elevator with roller conveyor on the floor delivers cartons from the second floor to the shipping room on the first. The conveyors cause the pallet to roll out and be picked up by a fork lift truck. The elevator automatically returns to the second floor after the pallet actuates a switch in rolling off.



HIGH lifting strength employed to good advantage for handling sprockets, with contacts on very few teeth required.

Magnetic "Muscles" for Heavy Handling

Latest word on the use, care and operation of electromagnets which are making light work of large, hot, dirty and wet material handling jobs.

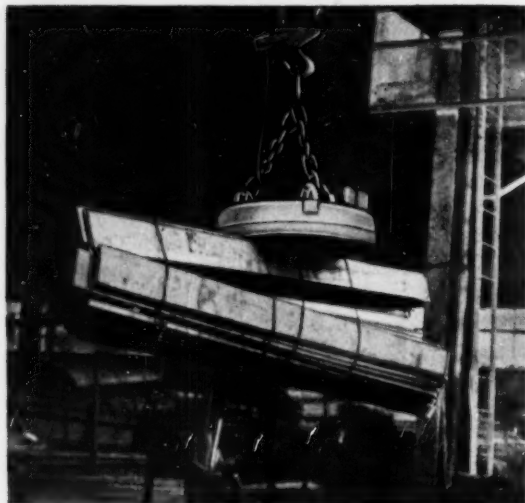
By John E. Hyler

LIFTING magnets of various types so greatly simplify so many different kinds of material handling problems that uses for them are steadily increasing. In countless plants, steel mills, scrap yards, and warehouses, heavy duty electro-magnets have paid for themselves over and over again. And smaller types with great strength, in use and under development, are applicable to lift trucks and other forms of material handling equipment.

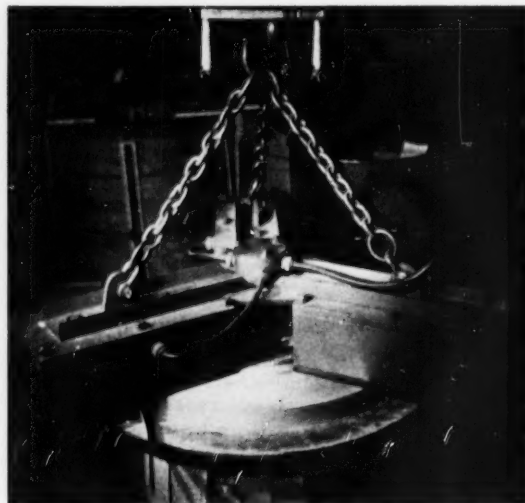
Like any other type of equipment used hard and continually, lifting magnets fail now and then in service, and must be repaired. Cracks sometimes develop in magnet cases and other parts. Considerable wear occurs on pole shoes from frictional contact with ma-

terial handling. On bolted magnets, in some cases, bolt heads have worn completely off, allowing pole shoes to become excessively loose, or to fall completely off the magnet. Manganese steel plates are on the bottoms of magnets to protect the coil from the material handled. These plates occasionally warp and develop cracks. In some cases, magnet assembly bolts may stretch somewhat under repeated loading, allowing a gap to occur, and that leads to trouble.

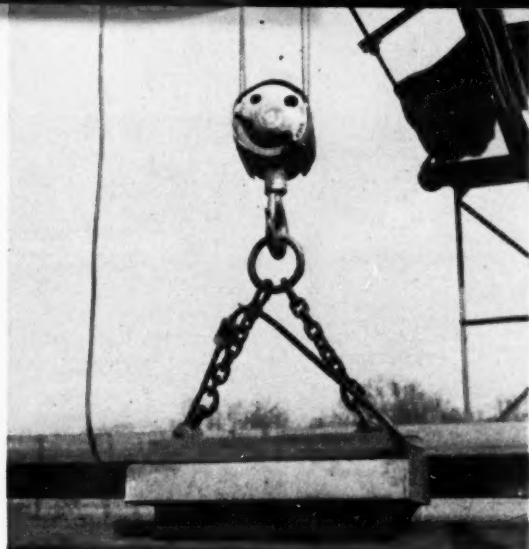
Electrical failures may occur. While these may, and do, take different forms, they are nearly always due to moisture getting into the magnet. Therefore, a definite objective in the maintenance of bolted-construction magnets must be to keep the case as tight as possible.



BUNDLES, squares, round, angles, other lineal stock carried by magnet suspended from cab-operated monorail in warehouse of farm implement plant.



COILED steel handled by arrangement in which three rectangular lifting magnets have been incorporated into a single lifting unit of great strength.



Moisture Produced Inside

Some manufacturers have specialized in the production of welded designs, claiming certain advantages—i.e. the effective magnet area is increased because no space is required for outer pole shoe bolts, and no space is needed for bolts and bars used to clamp the coil winding to the steel hub and brass bottom plate. They also claim that the tightly welded magnet, together with more effective insulating compounds now in use, effectively excludes moisture. Other authorities point out that, while trouble is very often caused by moisture entering a magnet from outside, it is also true, in many cases, that moisture is actually *produced* inside the magnet—especially in cases where it is used for handling hot materials, as around steel mills and foundries. Decomposition of insulating compounds, which may take place at any point above 500 or 600 degrees F., will result in water of decomposition. Most electrical failures in lifting magnets are believed to occur as a result of a wet coil.

In some types of both welded and bolted magnets coils are hermetically sealed. The idea of the capsule coil is to totally enclose it and insulation in a doughnut-shaped, water-tight, stainless steel housing, which is filled and sealed with a non-remelting compound. A capsule of this kind may be removed or replaced as a complete unit, once the magnet top case or pole shoes have been lifted off.

Replacing one of these coils in some welded units is accomplished simply by cutting away the welds between the case and the inner and outer pole shoes, together with two welds which fasten the coil to the magnet case. With other types, access to the capsule is gained by removing bolts which hold the center pole shoe. Duty imposed on many lifting magnets is rigorous; a new hermetically-sealed coil can be carried in stock for any magnet using such coils, and replaced by the maintenance department. Then, after rewelding the inner and outer pole shoes in position, or rebolting, the magnet is again ready to go to work.

Where maintenance on a welded magnet requires removal of a non-sealed coil, or replacement of a set of worn shoes, the magnet is set up on a suitable bor-

STRUCTURAL steel, other lengthy shapes, are lifted and moved by rectangular magnets (especially designed for such service). Units also made for hot work.

ing mill for opening the welds. To re-seal, ductile welds should be made so that the magnet will stand a reasonable amount of abuse—and also to prevent the weld metal from being so hard and brittle that it will be difficult to machine away. Some magnet manufacturers have developed a suitable welding technique which they are in a position to transmit to users.

Water and Pressure Proof Equipment

While welded magnets are being manufactured and used increasingly, bolted magnets are still far from out of the picture. Some manufacturers make both types, providing magnets of bolted construction in four-coil types from 12 to 65 inches in diameter; units of six-coil type in diameters of 39, 46, 55 and 65 inches and eight-coil bolted magnets in 55 and 65 inch diameters. Where magnets are 45 inches in diameter or more, whether bolted or welded, they may be had in capsule-coil type.

Lifting magnets are considerably employed for salvaging metal from under-water locations. Obviously, this calls for complete submergence of the magnet, sometimes to a considerable depth for a long time. At

(More on next page)

ALL TYPES of steel are handled by fork truck equipped with crane attachment and electromagnet. As inset shows, equipment also serves well in scrap collection.



Magnetic "Muscles" for Heavy Handling . . . Cont'd

depths over a few feet, water pressure must be considered, and it is more than ordinarily difficult to keep water out of coil windings and terminal boxes. In such a case, every effort should be made to insure that a magnet has its coils as well protected from water as possible.

It is in such applications that magnets having sealed coils have their greatest value.

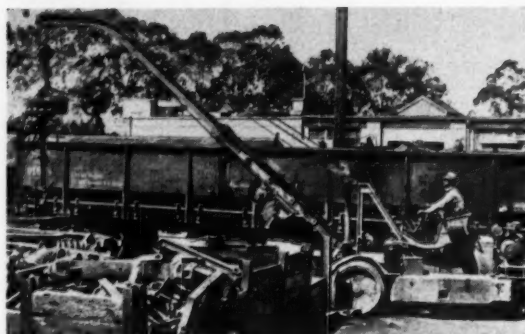
Most welded lifting magnets are at least nominally waterproof and capable of being used in submarine salvage work without alteration. It has been found feasible to use bolted magnets of standard type under water for short periods in many cases. In any case, where a magnet is to remain submerged over a long period, manufacturers can provide waterproofed bolted types.

Correct Operation Equals Preventive Maintenance

Manufacturers have often pointed out that proper operation and use of a magnet is equivalent to preventive maintenance. Instructions stress that the power should be kept off the magnet on the return trip, when it is carrying no material, and that it should be allowed to settle completely down on the load before power is applied. Also, manufacturers warn against using a magnet as a battering ram.

There are places and cases in which it is highly convenient to swing a magnet sidewise with the crane, against a beam or some other member, for spotting it exactly where desired. In consequence, many operators are tempted to do this too often, especially when they are not aware of the extensive damage that can be done to the magnet.

There is even an occasional case in which supervisors—fully aware of damage originally caused to magnets by this means—have sought to reinforce them



MOBILE equipment of nearly all types can, today, be equipped with smaller magnets of great strength.

with additional bulk and weight so that they can be used for this duty.

However that may be, magnet manufacturers, in general, make it clear that they do not recommend such a practice. In any case, it is a good idea to make a close check-up of magnet condition from time to time. If it is battered to any extent, at any point, it should be thoroughly inspected.

Controls Required

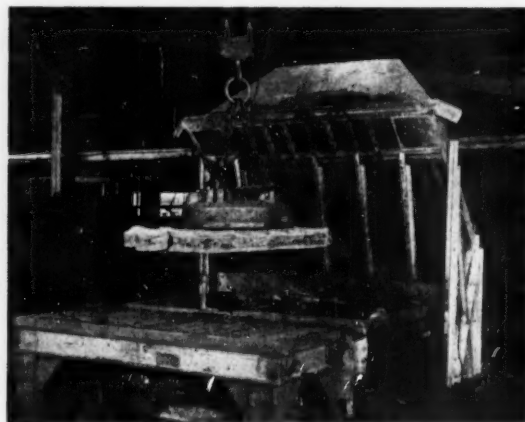
Special controllers are employed with lifting magnets because a large amount of inductive energy is stored in the magnet, and, during discharge and reversal of current, the peak voltage must be limited at the magnet terminals.

Some manufacturers customarily supply controllers suitable for their different models, and for different standard and special line voltages. Some controllers are manual; others are automatic.

Manufacturers of electrical equipment also provide magnet controllers designed for use on all types of lifting magnets. These are available in two styles—one for automatic, the other for manual drop. Both



CIRCLES torch-cut from plate steel are not always readily freed from parent plate, but a strong rectangular magnet will lift them out quickly and effortlessly.



MANY foundry operations are speeded and simplified through lifting magnets. Red hot metals may be handled, over extended periods, by "hot" magnets.

styles are usually supplied with a drum-type master switch, which can be replaced by a push-button if desired. The push button station may be either surface-mounting or pendant type.

Time Of Energy Application Affects Load

The proportion of full operating time during which a lifting magnet will be energized is referred to as the "duty cycle". This is a factor considered in design and manufacture. Generally, it is assumed that a lifting magnet in use on general-purpose work will be energized during 50 percent of the operating time.

Heat is generated by resistance in the magnet coil while it is energized. Sufficient provision must be made for the dissipation of such heat, and this calls for a difference in design of magnets to be used on different duty cycles.

Magnet controllers are highly important, but not more so than care on the part of the operator himself. Magnets are designed for given duty cycles, and the safe way to operate is not to energize them for any greater percentage of total time than necessary for efficient working.

In many cases, operators, not realizing the importance of this, re-energize a magnet as soon as the load has dropped from it, feeling that by so doing they can turn their attention from the magnet completely and give it to more efficient crane operation.

This is bad practice. It will result in a magnet handling less material per lift, as temperature builds up in it. The greater the distance through which material is transported before being dropped or set down, the greater is the importance of this particular point. Upon it depends both maximum lifting capacity and increased life for the magnet.

Also, as an already-energized magnet descends toward a pile of material, some of the pieces in the pile are pulled up endwise toward the magnet. In other words, the "unity" of the load is disturbed by the approach of an energized magnet. As a result, lifting capacity per load may be reduced anywhere up to 20 percent.

Over against this is the fact that when a magnet is set down on a load before being energized, a slight amount of additional time must be allowed after it is energized and before the lift is made. This seldom exceeds two or three seconds. The greater lifting capacity will usually more than compensate for what little time is lost in this manner.

Furthermore, build-up of very high temperature in a magnet presents the possibility of damage. It is always best for crane operators not to energize a magnet until it has come to rest on the load.

"Hot" Magnets Special Built

Around some places such as steel mills, foundries, etc., hot steel or iron may be handled at temperatures up to 1000° F. It is obvious that a magnet used for handling such materials should be very thoroughly insulated. Some manufacturers recommend that a magnet employed in such service be "dunked" in water, now and then, as an aid in heat control.

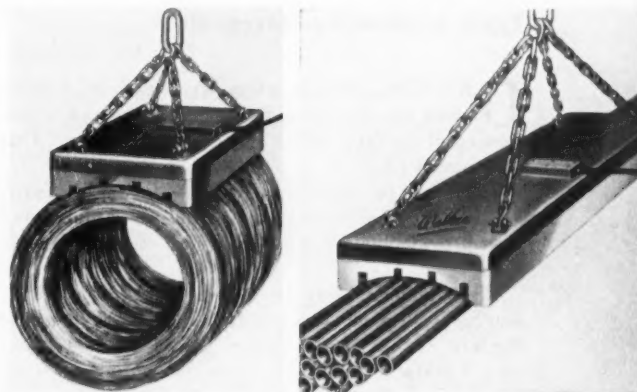
Different magnets are particularly designed for hot handling service, and some firms supply them in all standard types. Some so-called "hot" magnets are supplied with an extra thick, manganese bottom plate. In this plate are recesses with heat insulating asbestos bricks, together with a heat-dissipating filling compound. This treatment of the bottom plate makes it possible to handle metals up to 1000 degrees F. over extended periods without adversely affecting magnet performance or life.

Electric generating plants are also built especially for lifting magnet service. These are 3 to 25 kilowatts and in the range of 230 to 250 volts, especially recommended for lifting magnet service.

Special Magnet Types

Rectangular lifting magnets are available in many different lifting capacities, and in many different sizes. The shape of the magnetic field in a rectangular magnet makes it superior to a round magnet for work such as handling longitudinal materials like

(Continued on page 157)



CONTOURED magnets, which are designed for special applications to increase the area of control, provide high lifting capacities at less weight of magnet.



WATERPROOF magnets are required for submergence and very wet conditions. Welded types are normally suitable; bolted types can be waterproofed.

A Practical Manual of Material Handling Procedure

Section 3 TYPES OF HANDLING MOVEMENTS

Section 4 PROCURING IN PACK LOTS

By W. B. McClelland

Section 3

Types of Handling Movements

ORIGINAL location of material and its destination are first considerations upon which a discussion of the types of movements must be based. Our reference is Chart 3.

There are two kinds of origins, i.e., one or more, and two kinds of destinations, again one or more, and they provide for the following types of travel among them.

First, material may be moved from one point to another, individual, single point. An example would be the flow of coal from a storage pile to a furnace. Second, a material may move from one individual point to a variety of other points. Here, an example would be the soft drink leaving a bottling machine to be stored in a variety of locations in a warehouse.

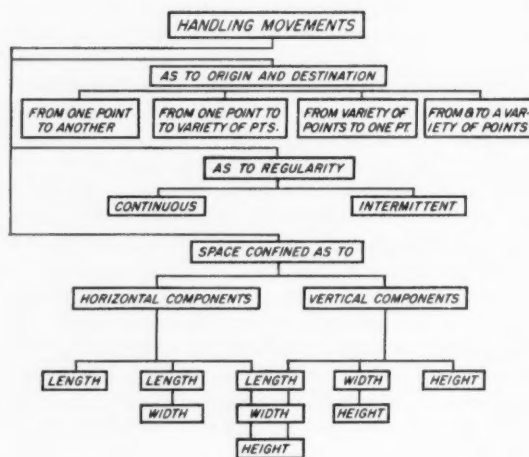
Third, material may be moved from a variety of points to one point. For instance, merchandise in storage at various locations may be collected and shipped from one truck well at the dock. And fourth, movement may be from and to a variety of points—as in goods stored at numerous locations, in one or more warehouses, may be loaded and shipped in various cars, stationed at the railroad siding.

In any of the above situations, one must consider the regularity of the movement. It may be intermittent or continuous. In the former case, we may ship a truck's load of material to some place today, another tomorrow, and then maybe we won't move any more for a week. An illustration of continuous movement is that of oil through a pipeline.

Space Consideration in Cube

The next thing to think about is the space in which a movement must occur, and this is always in regard to the components of the cube. Confines of handling movement, then, can be classified in accordance with

Chart 3



these components and the elements which constitute them.

First, we may have movement as to length only i.e., a railway car leaving Detroit can move to Chicago on only one path, which is prescribed by the rails over which it travels. Next, we may have length and width involved in this movement. A highway truck has the option of various paths or roads between Detroit and Chicago.

A movement may be in elements of length, width and height. An example would be a fork truck working inside a warehouse. It can pick up and/or deposit its load at any point inside the walls, between the floor and the ceiling. That is, it can work in all three of the components of space.

Then we have movement in length and height only. An example of this might be an inclined conveyor carrying material from one floor to another where the destination and origin are not perpendicularly

This second installment covers the broad varieties of handling movements and establishes the basis for the economies gained in procurement by unit quantities.

3. If outer containers which are light, uniform, stackable and durable are to be moved, intermittently, anywhere in the warehouse—i.e., limited again as to length, width and height—these units might be combined on a consolidating container, such as the pallet, and moved with a fork truck.

(More on next page)

[illegible]

Section 4

Procuring in Pack Lots

DISCUSSION in this section will pertain only to the transit phase of handling, with an occasional analogy that might apply in the distribution phase. That is, we will be considering the procedures and routines for the analysis of handling and packaging problems involved from the last production operation in the supplying plant to the first production operation in the contractor's plant.

Savings to be derived from receiving materials in unit loads warrant considerable study. Inasmuch as the loading cost at the shipper's plant, container costs—as well as freight charges—are a part of the customer's cost, it behooves the customer to take the initiative and designate the most economical means of packing and shipping his material.

It has been the custom for the vendor to have a free hand in delivering merchandise to his customers in

CHART 5

JOHN DOE MFG. CO.	
Gross Weight _____	Pack No. _____
Tare Weight _____	Part No. _____
Net Weight _____	Description _____
Tariff _____	Quantity Per Pack _____
	Dept. _____
Container Used _____	
Packing Instructions _____	
Photo Or Sketch Here	

any manner he might choose—i.e., the customer's attitude has been, "We bought it; you get it to us".

Customers Should Control Containers

There are sound reasons, however, for the customer's wanting to own containers, or at least to designate the type of container in which his purchases shall arrive, and also to specify the quantity to be delivered in each unit. Think of some of the reasons:

1. If the containers are issued by the customer to the vendor as materials are scheduled, the vendor will retain them but a few days. The customer will want to use them for incoming storage and, possibly, on through his production operation. Doesn't it seem logical that the one holding the container the longer should own it?

2. The vendor will also save money by shipping in containers suitable for loading with established handling equipment. There is precedent for the suggestion that the customer charge the vendor an equitable rental for each container issued to him. Or, if no rental is charged, it seems obvious that the price of the material should be decreased accordingly. In either case, the vendor will share the cost of the container. Thus, the customer's parts arrive in uniform quantities, in uniform containers suitable for uniform handling and stacking through his receiving operation.

If the vendor furnishes the containers, the customer's docks and storage rooms are cluttered with a variety of barrels, boxes, bags, etc., each requiring a different method of storing and handling.

(Continued on page 106)

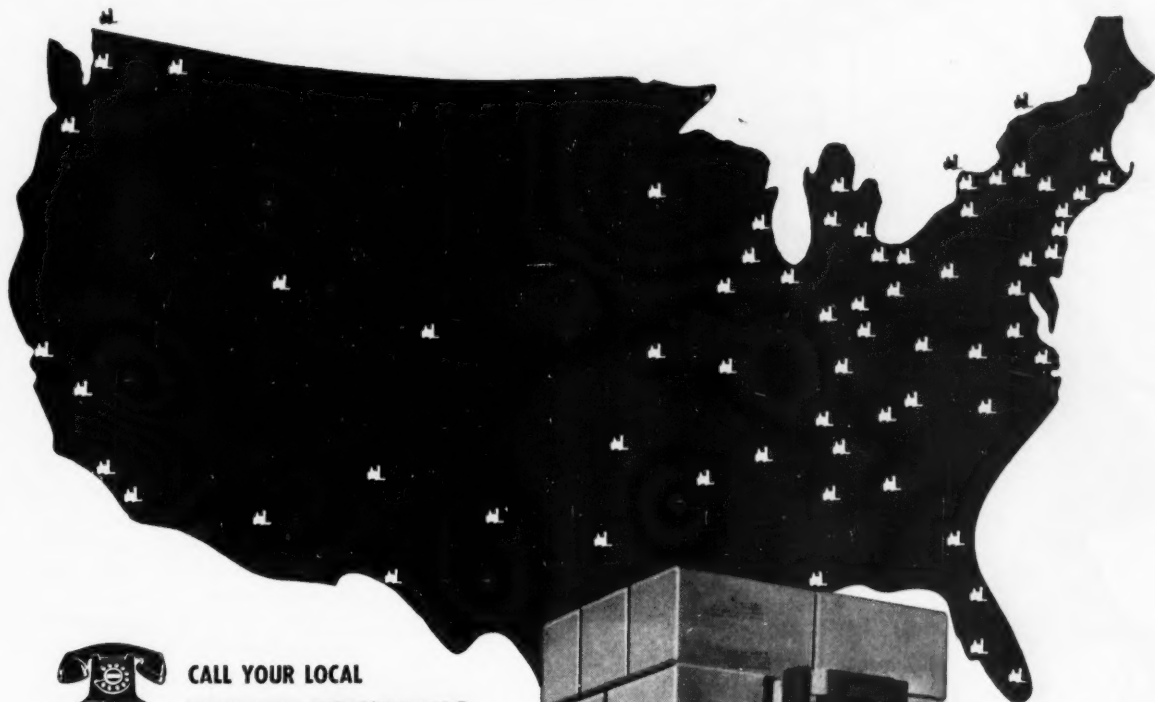
CHART 6

CONTAINER ANALYSIS SHEET

	CONT. A	CONT. B	CONT. C
Investment (each)			
Invoice Price			
Freight In			
Other			
Total Investment			
Data			
Weight (Lbs.)			
Useable Volume (Cu. Ft.)			
Life (Trips)			
Rated Capacity (Lbs.)			
Cost Per Trip			
Write-off			
Repairs			
Tare Cost			
Loaded			
Return			
Other			
Credits			
Total Cost Per Trip			
Cost Per Ton Per Trip			

Next month, in the third installment of the Manual of Material Handling Procedure, the handling of a common item will be analyzed as it moves through all normal operations—illustrating the procedure that can be applied in the great majority of situations.

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For fast service and the name of your closest Towmotor Sales and Service office, see the yellow pages of your local telephone directory.

An important part of Towmotor policy is to spot service facilities *near* each Towmotor user. Your nearby Towmotor Representative is your service station. Whether it is a routine Preventive Maintenance check-up or an emergency call, his factory-trained and factory-equipped mechanics are at your service. To assure original performance and economy, your Towmotor Representative also maintains a full and complete stock of Towmotor Replacement Parts. Ask for a copy of the "Towmotor Portfolio on Preventive Maintenance."
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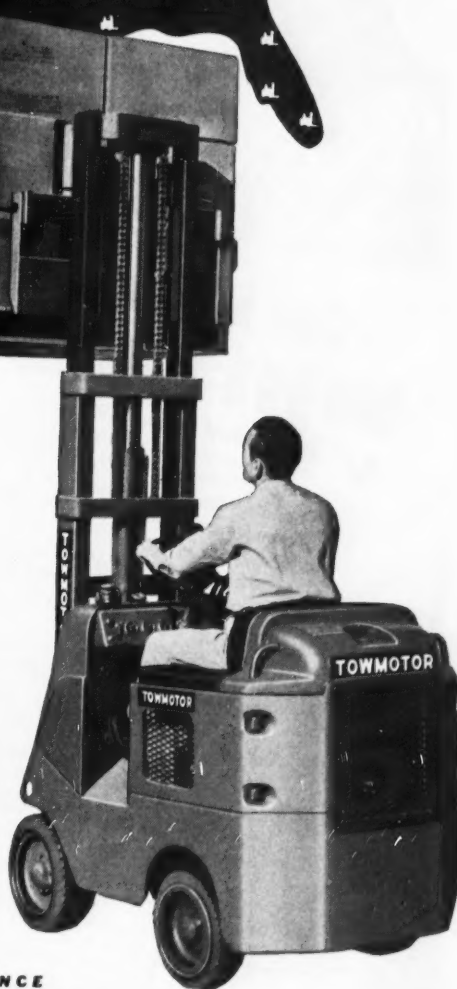
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Other Whiting materials handling equipment:
Overhead Cranes • The Trackmobile • Electric Chain Hoists

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Send for this Folder!

See how Trambeam speeds work in six departments of the Euclid, Ohio plant of Reliance Electric and Engineering Company!



INDUSTRIAL RADIO . . .

(Continued from Page 69)

Frequencies Are Wasted

There are also frequencies which were allocated to the broadcasters for FM broadcasts. The development of FM stations has been very disappointing and of those who have been granted licenses, many are cancelling them each day. The annual reports of the FCC for the fiscal years of 1949 to 1953 indicate that the total number of FM broadcast stations authorized has shown during that period a total net decrease of 419. The range of an FM station is relatively small, and even in a metropolitan area like New York it is inconceivable that there would be as many as 200 FM stations within an area covered by the signal strength. Obviously, there is a tremendous waste of frequencies in that portion of the spectrum.

In the 460-470 Mc band, there are 100 frequencies which have been set aside for the so-called Citizens Radio Service. For a considerable time, there was no development in this area, although the Commission reported in rejecting our petition that some 3000 units were functioning within those frequencies.

These 100 frequencies are divided into two parts: 40 for Class A equipment and 60 for Class B equipment. Class A equipment is available. For Class B equipment, it is reported that only one manufacturer has announced the availability of such equipment and it is said by many to be inferior in quality to Class A equipment.

Radio engineers have indicated that the set is tuned for about the middle of a 60 frequency spread and its discrimination is so poor that it may spread over on both sides of this center point. Again it seems to the Committee that this represents a tremendous waste of frequencies which could be given to manufacturers whose contribution to the economy is so tremendous and for whom radio can probably do more than it has been able to do for many others.

Increased Interest

The Committee on Manufacturers Radio Use, while disappointed because the Federal Com-

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You can't beat Ohio Magnets for

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Morning . . . noon . . . night—Ohio Magnets lift uniformly larger loads over extended periods because they operate *cooler*.

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For extra magnet performance, extra magnet value—specify Ohio Magnets. Remember, Ohio Magnets lift larger loads longer—*especially with Ohio Magnet Controllers*. Send for Bulletin 112.

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OHIO BOLTED MAGNETS. 12 to 65" diameter. 6-coil types in 39 to 65"; 8-coil in 55 & 65". Strap copper coils over 39". Bolts protected in recessed walls. Also capsule coil over 45".



OHIO WELDED MAGNETS. 39 to 65" diameter. Lightweight models in 39 & 45"; 6-coil types in 46, 55, 65"; 8-coil in 55 & 65". Weld on top where it can't get dented in. Also capsule coil over 45".



OHIO BASKET MAGNETS. 55 & 65" 4-coil, & 65" 6-coil. For extra heavy-duty service; hefty ears project beyond magnet diameter, ward off damaging blows. No weight carried by bolts. Also capsule coil over 45".



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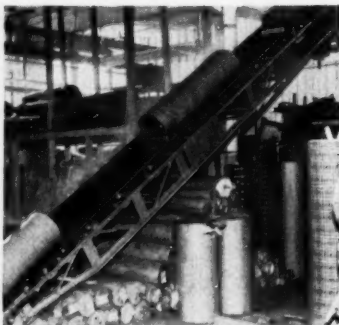
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The complete line of Farquhar power-belt and gravity conveyors includes sizes and types for practically every requirement found in industry. Standard units, in a wide variety of models and sizes, are available for horizontal and floor-to-floor operations, in portable, semi-portable and permanent installations. Or, if your problems can't be solved by standard units, drop us a line on your letterhead, and our engineers will be glad to assist you in working out a solution. There's no obligation, of course.



Whether you move coal, gravel, sand, aggregates, boxes, cartons, bales, bundles or any kind of bulk or packaged materials, Farquhar can cut *your* handling costs to rock bottom! Want proof? Mail the coupon below!

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INDUSTRIAL RADIO

Continued

munications Commission did not grant its petition, has had a great deal of encouragement in its work over the past year. For one thing, there has been a decided increase in the interest taken by manufacturers on how to expand the uses of radio. We are hearing every day of more integration of radio into production schemes. Even more encouraging is the realization that its use must be protected.

Once adopted, radio becomes a way of life from which it is very, very difficult to retreat. A plant which has integrated radio into its production programming would be seriously handicapped in its total operations for some days if radio should suddenly become useless.

It was indicated to us by members of the Commission that now, more than ever, manufacturers need a voice to present their position to the Commission. It seems inevitable that the Commission will in the not too distant future be required, in the public interest, to re-examine the use which is being made of existing frequencies and be forced to consider a reallocation of those frequencies. At such times, the manufacturers can only hope to be fairly dealt with if someone is presenting their story to the Commission officials.

The National Association of Manufacturers has agreed to take this program into its activities and has assigned a member of its Washington staff to assemble all possible information and pursue whatever course seems desirable to best advance the interests of manufacturers. The NAM also is planning to appoint an advisory committee of manufacturing users who can assist in the programming and planning.

At the present time, I have a great deal of optimism with respect to the many expanding uses of radio and the necessary recognition by the FCC of that growth. Manufacturers and material handling experts who employ its terrific potentiality must have the kind of protection needed to assure continued use once radio is installed.

Look at the Safety and Convenience Features in

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You are invited to compare this new Coffing Safety Hook, and see for yourself its many advantages — in safety to men and equipment, in convenience and ease of use.

POSITIVE LOCK under spring tension securely holds the latch in place.

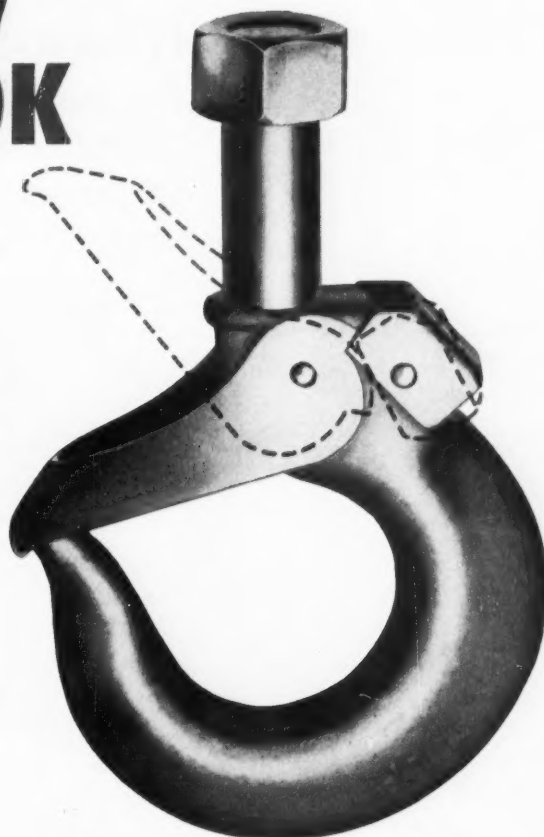
NO SIDEWAYS MOVEMENT POSSIBLE, because latch fits snugly over point of hook.

HIGHER TENSILE STRENGTH than any other hook of its size. Has drop-forged, heat-treated alloy steel construction.

NO RUSTING OR CORROSION to hinder use, because the hook is cadmium plated.

EASILY RELEASED — HELD OPEN — Slight pressure on the release unlocks the latch. Spring tension on the release also holds the latch open.

LARGE THROAT OPENING allows full and unobstructed use of entire area inside the hook.



Send today for literature just published telling all about the outstanding new Coffing Safety Hook — just ask for Bulletin FL65H.

**AVAILABLE FOR BOTH
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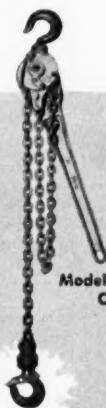
The Safety Hook is available on new Coffing Hoists you order, and you can also place it on Coffing Hoists already in service . . .



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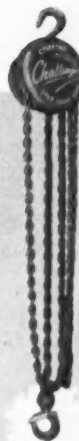
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Fluid coupling, oil-immersed clutch, constant mesh transmission — a combination that transmits power smoothly and efficiently with minimum wear and service. There is NO CLUTCH PEDAL — just ONE push-pull forward and reverse lever!

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INDUSTRY-COLLEGES . . .

(Continued from Page 79)

The first of a series of educational motion pictures is near completion. It will be a composite of films made during the past several years by various manufacturers of fork-lift trucks and ancillary equipment and, it is understood, will be made available to industry, educational and professional institutions on a loan basis. Subsequent films will be devoted to other types of material handling equipment and accessories.

In their efforts to make the College-Industry Committee's Seminars—which are really a facet of continuing education as conducted by various colleges and universities in material handling and other subjects—more valuable to those attending, Mr. Footlik has prepared a check-list which he suggests each participant prepare in advance. This check list, is it pointed out, doubtless can be of value to anybody in material handling, whether planning participation in a Seminar or Conference, or not. It follows:

Material Handling Check List

Is materials handling a problem that needs attention in your plant? Every "yes" answer to the following check list is an indication that your handling system may be anticipated and is costing you needless waste in dollars and man-hours.

1. ☐ Are your indirect labor costs high?
2. ☐ Is your overhead expense too high at any point?
3. ☐ Do you have many employee accidents due to the handling of materials?
4. ☐ Is there much manual handling of materials weighing more than 50 lbs (by male employees), or 25 lbs (by female employees)?
5. ☐ Do you have many handling jobs requiring 2 or more employees?
6. ☐ Are skilled employees, such as machine operators, required to waste

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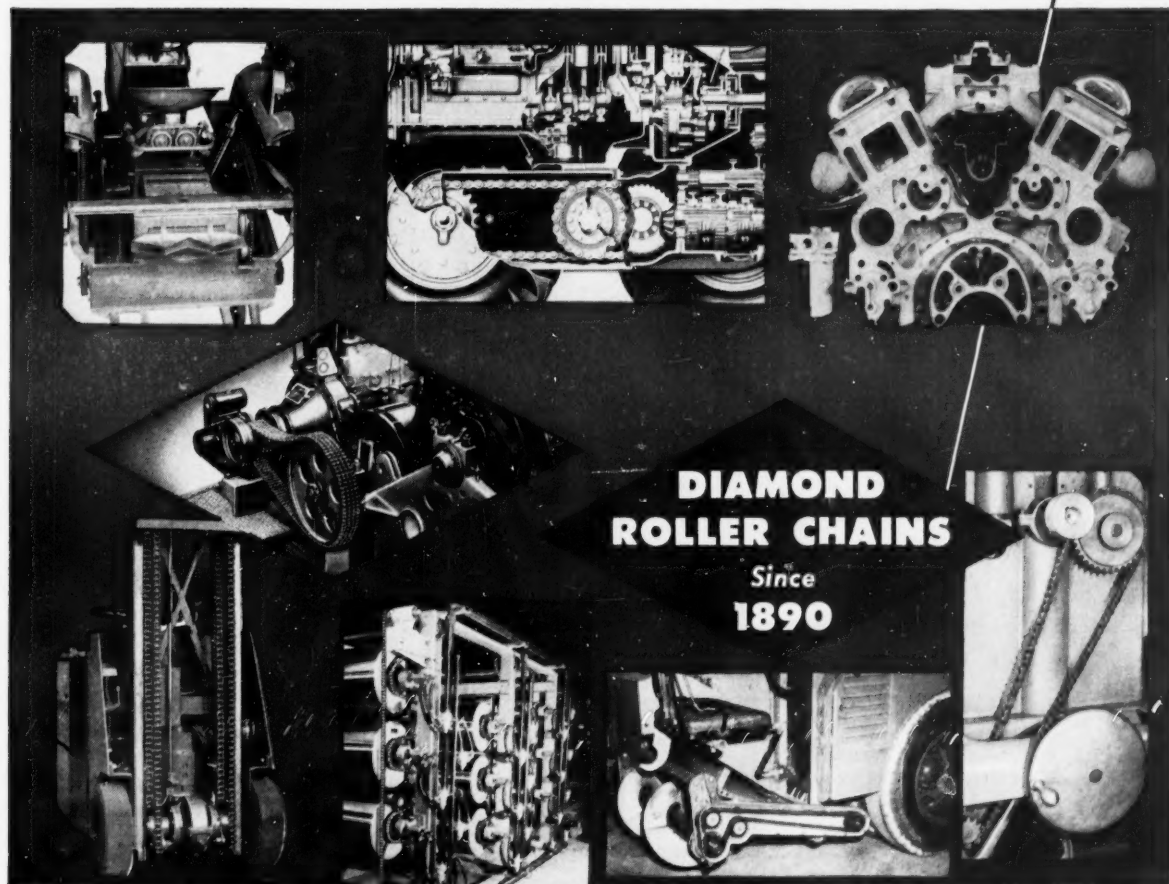
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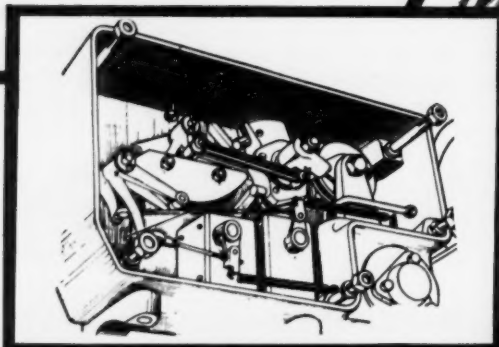


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SAFETY

WITH A COLES CRANE
**SAFE-LOAD
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COLES SAFE-LOAD INDICATOR

Prevents operator from lifting any loads in excess of rated load at any given point of radius. A warning light directs attention immediately to an overload. Current is cut-off automatically if operation is continued.



YES! Coles "Safe-load" indicator provides all around protection to operator, as well as to your investment in the equipment. Self-resetting safety limit switches fitted to hoist and boom hoist motion. Coles cranes embody many exclusive features which makes it the ultimate in safety—economy and versatility—designed expressly for industrial materials handling. The only crane with a one year warranty.

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**The Name That Carries Weight
In Material Handling**

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INDUSTRY COLLEGES

Continued

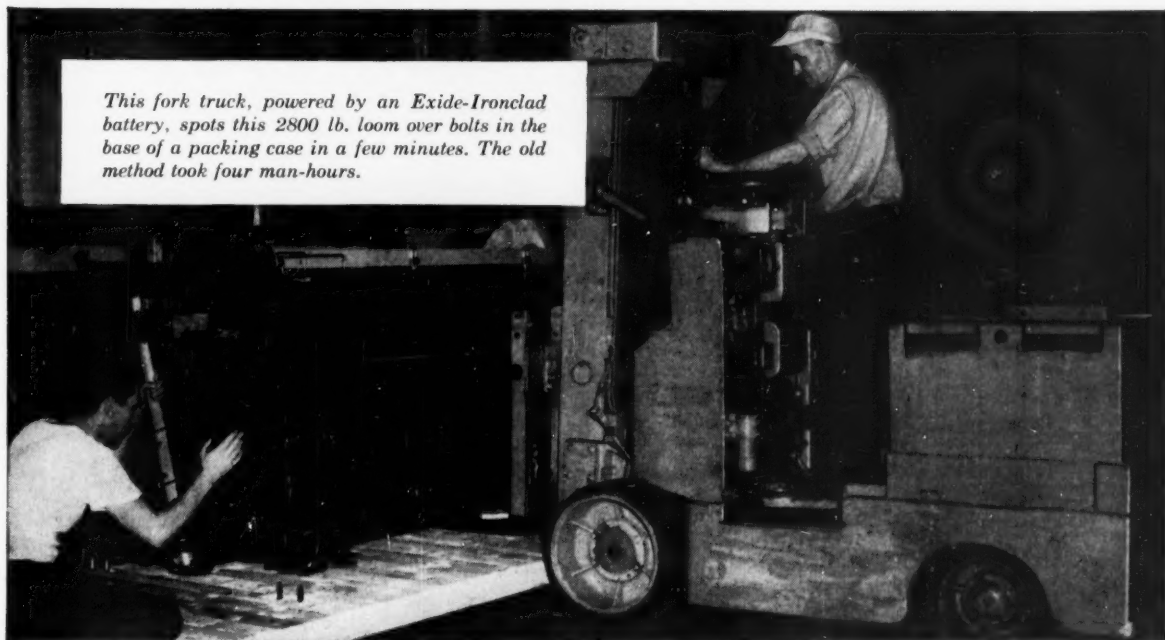
- time handling materials to and from their machines?
7. ☐ Are there frequent delays in production time due to poorly scheduled delivery and removal of materials?
 8. ☐ Is there an unexplainable decrease in production in certain departments?
 9. ☐ Do you find material "jammed up" at certain points?
 10. ☐ Can you make more efficient use of your storage space by mechanical high tiering of stock to the ceiling?
 11. ☐ Is there opportunity to utilize "overhead space" for storage?
 12. ☐ Are your demurrage charges high?
 13. ☐ Can you make more efficient use of "unit loads"?
 14. ☐ Is much of your material damaged during handling?
 15. ☐ Are goods often misplaced?
 16. ☐ Are the maintenance costs on your materials handling equipment continuously rising?
 17. ☐ Are there many single handling jobs requiring two or more different types of handling equipment?
 18. ☐ Do you load freight cars or trucks by hand?
 19. ☐ Do your shop trucks operate more than 20% of the time empty?
 20. ☐ Is the major portion of your materials handling equipment over 10 years old?
 21. ☐ Do you have many re-handling points along your production lines?
 22. ☐ Does your present handling system eliminate unexpected material shortages?
 23. ☐ Are you performing too many different kinds of handling operations when fewer would do?

(More on page 102)

GET FAST, SAFE HANDLING

...with low cost Exide®-Ironclad® power!

This fork truck, powered by an Exide-Ironclad battery, spots this 2800 lb. loom over bolts in the base of a packing case in a few minutes. The old method took four man-hours.

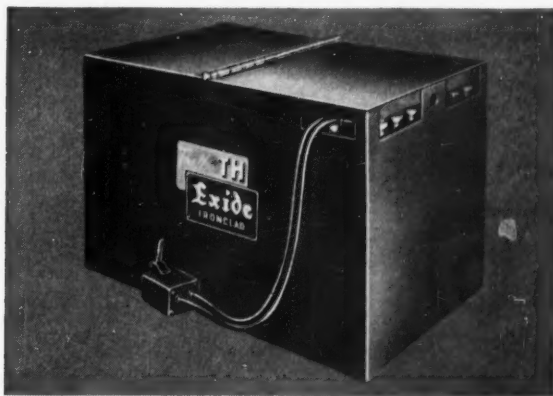


YOU GET fast, safe and low cost handling when your lift trucks are powered by dependable Exide-Ironclad batteries. In addition, these rugged, long life batteries assure full-

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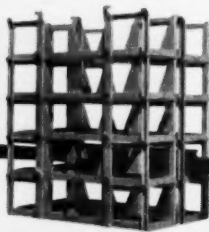
PS PORTABLE Heavy Duty BAR RACKS



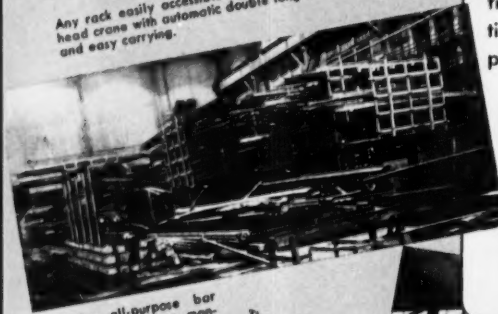
Any rack easily accessible by one-man operated overhead crane with automatic double tong for quick pick-up and easy carrying.

ANY RACK EASILY ACCESSIBLE

Tier and store steel shapes the simple, safe, space-saving way. No rack selection problem using overhead crane. Design-adapted for easy selection from racks without disturbing tiers. Custom-built for any capacity and stock length.

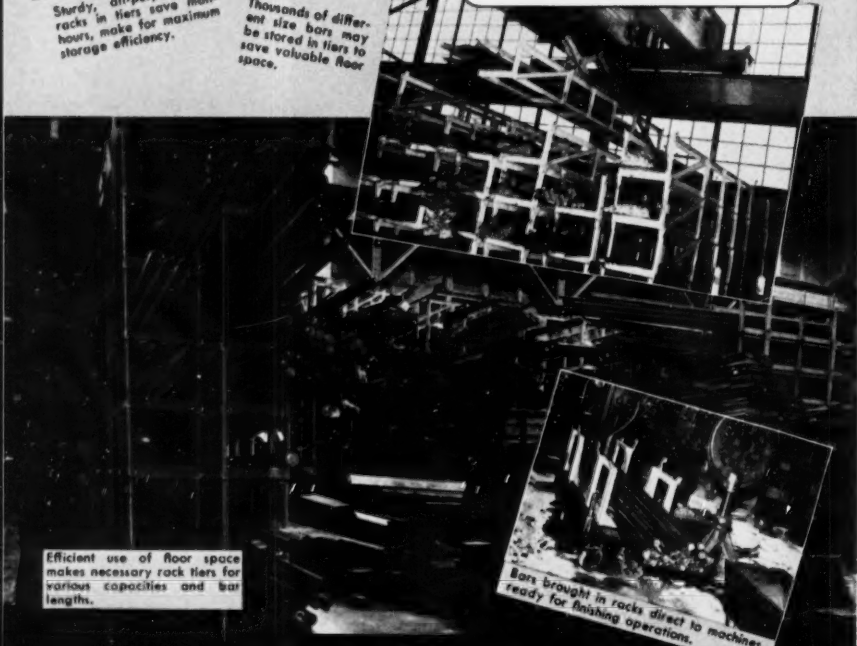


Item C-497



Sturdy, all-purpose bar racks in tiers save man-hours, make for maximum storage efficiency.

Thousands of different size bars may be stored in tiers to save valuable floor space.



Efficient use of floor space makes necessary rack tiers for various capacities and bar lengths.



Bars brought in racks direct to machines, ready for finishing operations.

DESIGNED AND MANUFACTURED BY

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When Ordering Always give "item" number; this will help prevent error.

Write for catalog.

INDUSTRY-COLLEGES

Continued

24. ☐ Do your lines of material travel overlap?
25. ☐ Are you using power arrangements when gravity could move the work more economically?
26. ☐ Are you trying to fit misfit handling devices to new production jobs just to use up old equipment?
27. ☐ Do you perform a lot of unnecessary handling operations?
28. ☐ Have you been using special devices when standard equipment would suffice?
29. ☐ Can you combine operations to avoid repetitions of materials travel?
30. ☐ Do you try to make one kind of equipment do all kinds of handling jobs?

"After this has been done (the check-list filled out)", Mr. Footlik says, "you and management will be satisfied that your material handling may be antiquated and is costing needless waste in dollars and man-power. It will also prove a logical reason for attending the conference.

"The next step then is: What information to bring to the conference", Mr. Footlik continues. "If the problem relates to the choice of equipment . . . obtain the following facts:

1. The volume of goods to be handled.
2. The physical characteristics of the items to be handled, such as weight, length, shape, etc.
3. Travel characteristics such as distance and location of travel.
4. The allotted time in which to do this handling. Included in this would be frequency of operation.

Together with the above, there should be some information with relation to the facilities where this equipment will be used, such as:

1. The type of building: Single story, multi-story, etc.
2. Floor-load capacity.
3. Elevator capacity and size.
4. Dock facilities.
5. Condition of floors.
6. Bay spacing.

(More on page 104)

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CONNECT TO BATTERY as Frank J. Thornton, foreman of the Albany Freight Transfer, Delaware & Hudson Ry. is doing, then . . .



TURN ON TIMER . . . and the charger takes over automatically. When charge has been completed, units turn off automatically.

Why Delaware & Hudson Railroad Uses G-E Chargers for Driver-Lead Trucks

Five nights a week for the past three years, two G-E Rectifier Battery Chargers with sequence charge control have charged four driver-lead trucks at the Delaware & Hudson Railroad Corp.'s, Albany Freight Transfer. "Excellent service" reports A. B. Cook, Freight Agent in Albany. "We need top efficiency for closely-timed freight handling, and we get it with G-E Rectifier Battery Chargers."

Easy to install, easily moved to more efficient locations, and simple to operate as well, G-E Rectifier Battery Chargers have no moving parts to wear out, require virtually no maintenance, and can be adjusted to charge different types and sizes of batteries. The high quality rectifier stacks assure long, economical life.

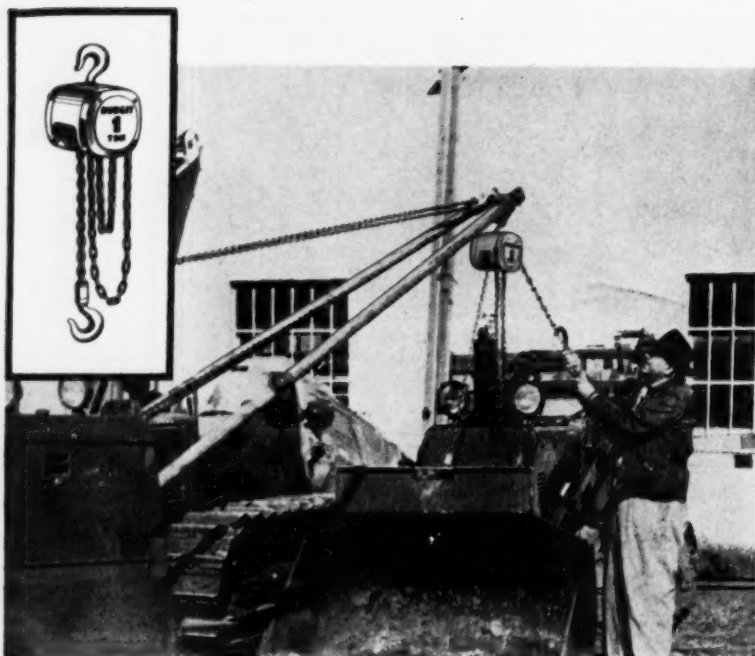
For more information, see your truck manufacturer's agent or G-E Sales Office. For literature write to Section 463-9, General Electric Company, Schenectady 5, N. Y.



DOUBLE CHARGING CAPACITY with G-E Sequence Control, for less than the cost of an additional charger. With one charger you can charge 2 batteries in 13 hours or less.

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GOES TO THE JOB . . . SAVES ON THE JOB

It's the *'Budget'* ALUMINUM CHAIN BLOCK

Light, easy to carry, hang up and use, the 'Budget' Aluminum Chain Block puts real economy into spot lifting jobs. The $\frac{1}{4}$ -ton size weighs only 29 lbs. It provides fast, efficient spur-gear hoisting with a pull of 25 lbs. only on the hand chain to lift the full load!

No ordinary hack saw can cut the superhard chain on the tough 'Budget' Aluminum Chain Block. Non-fracturing hooks assure extra safety for man, load, hoist. The powerful, automatic load brake reduces the amount of pull required to lower loads while speeding up lowering. Two sets of gear teeth in each gear carry the load — lifting and lowering are smooth with the 'Budget'. All fastenings are splines. Loading is distributed evenly on the shafts. No keys and keyways to wear. You save all around.

For maintenance, for trouble-shooting, for full-time jobs — you can make no better investment than the money-saving 'Budget' Aluminum Chain Block. Capacities: $\frac{1}{4}$, $\frac{1}{2}$, 1 and 2 tons. Your "Shaw-Box" Distributor will gladly give you complete information — or, write us for Bulletin 398.



'BUDGET' I-BEAM TROLLEYS enable your hoist to travel as well as lift the load. They are made of steel. Wheels have ball bearings for smooth action. Easily adjusted to fit various I-beam sizes. Capacities: 500 to 4,000 lbs. Priced from \$15.50. Write for Bulletin 390.

'Budget' CHAIN BLOCKS

MANNING, MAXWELL & MOORE, INC.
MUSKEGON, MICHIGAN

Builders of 'Shaw-Box' and 'Load Lifter' Cranes, 'Budget' and 'Load Lifter' Hoists and other lifting specialties. Makers of 'Ashcroft' Gauges, 'Hancock' Valves, 'Consolidated' Safety and Relief Valves, 'American' and 'American-Miscrofen' Industrial Instruments, and Aircraft Products.

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INDUSTRY-COLLEGES

Continued

7. Aisle widths.
8. Door widths and heights.
9. Ramp conditions.
10. Percentage of area now used.
11. Ceiling heights.

In conjunction with the above, furnish information relative to transportation equipment used, such as freight car loading facilities, truck loading facilities, size of motor trucks used, type of truck, distance, volume and frequency of shipments.

Factual data on equipment now in use: The number and type of fork trucks, hand trucks, pallets, etc. Be sure to include with this their capacity and size; also information on any auxiliary handling equipment such as boxes, racks, etc., that might be available.

Be prepared to indicate management's master-plan thinking so that it can also be incorporated into the suggested solution.

Bring any flow charts, floor plans, process charts, photos, etc., that will help illustrate the problem.

Be sure that all your facts and figures are actual and that you have covered all phases of the present method.

"If you are armed with the above information," the College-Industry Committee secretary concludes, "then you have made the proper approach to your material handling problem and are ready to present it to the conference."

What he has left unsaid, excepting perhaps by implication, is that the same procedure can be used with profit by the material-handling man who can't get to a Seminar or Conference, but who can use his head.

*It's Convenient
To Use
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Reader Service Card
Bound Into
This Issue*

SERVICE
...introduces a
superior truck
TO SAVE
YOU MONEY

"THE
*Handler***"**

*First proven gasoline
powered Lift-Truck with hydraulic
drive*...and hydraulic control*



THE *Handler*
4000 LB. CAPACITY

JUST ONE LEVER

✓Shifts ✓Lifts ✓Brakes



The simple movement of this one lever automatically shifts from low to high and high to low ...two speeds forward and two speeds backward!

By simply raising the control lever the Handler's power load-lift goes into action. No time lost hunting other controls. Completely modern.

"Dead man" brakes—always more safe. And on the Service Handler they are automatically applied the instant the operator lets go the control handle or steps off the truck.

And REMEMBER... INSTANTANEOUS REVERSING WITHOUT SHIFTING OR ROTATING THE POWER UNIT.

The *new* Service Handler is the ultimate in rider-type powered lift trucks. Its economical and efficient 6 h.p. gasoline engine has the power and stamina to keep the brawny Handler performing around-the-clock, at startling savings. And it's easy to service. All working parts are accessible in seconds by simply unsnapping the hood.

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LIFTERS • LIFT TRUCKS • SPECIAL EQUIPMENT

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RIDER-TYPE — means covering the plant in quicker time, reducing the overall cycle time.

*Patent Applied for

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Please quote prices on () SERVICE HANDLERS with platforms of () size. Have salesman call ().

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BELT
CONVEYORS**

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TROJAN
MODEL F-1022

If your problem is handling bulky crates, small stampings or hot, abrasive castings...up, down or on level...there's a BUSCHMAN powered-belt conveyor for your job.

Two basic units... TROJAN and PRESS-TENDER are adaptable to meet most materials handling needs.

PORTABLE

Easy-rolling wheels... positive floor-locks, versatile BUSCHMAN units are spotted quickly anywhere or used in permanent installations.

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Operating angles of BUSCHMAN powered-belt conveyors are variable and working heights adjustable front and rear.

ONE-MAN OPERATION

Sturdily constructed BUSCHMAN powered-belt conveyors can be positioned easily and rapidly by one man.



**FOR PACKAGES
AND FOR PARTS
IN OPERATION**

Wide range of belt speeds, lengths, widths and heights... cleated canvas, wire mesh, positive-gripping rough top, oil-resistant neoprene or other types of belting available...special feeders, flapper gates and attachments can be furnished to your specifications. Write for free Catalog today!



Complete conveyor systems for all types of industries
Engineered • Manufactured • Installed



C-1753-
EWB

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4450 Clifton Ave. • Cincinnati 32, Ohio

Representatives in principal cities

PRACTICAL MANUAL . . .

(Continued from page 92)

3. If each unit load of the same part contains the same quantity, material can be received by pack lot instead of by individual pieces, stock records can be maintained by pack lot, and inventory taking and inventory checking will consist of counting containers instead of pieces. If complete inspection is not necessary upon receipt, a sample quality inspection can be conducted—just enough to make sure the material will meet customer needs—the vendor's count can be accepted and the invoices paid. When the material is issued from stores to the first operation—at which time it must be manually handled anyhow—a complete count and inspection can be conducted if necessary. At that time, rejects and discrepancies can be adjusted back through the purchasing department.

Simple Procurement Analysis

Chart 4, which titled "Procurement Analysis Sheet", includes the data one should collect to make a study of the best means of packaging and handling the items which he purchases. Let's go through this and discuss the items involved.

We start off with the part number, the description, name, or however it is identified. The next column is titled Storage Time. By that we mean a policy decision as to how long material is actually wanted on your premises, in incoming stores, before it is scheduled to go into production. In other words, how much of a ready bank do you want ahead of production. With that information and a knowledge of scheduling, you can determine the Quantity in Stores.

This ties in with plant layout. In other words, with information so far recorded you can determine the cube and the square needed to store this part, and the tabulation of all materials or parts gives you the incoming store room space required.

The next item is Economical Issue Unit. By this is meant the maximum quantity of this particular item that is economical and feasible to place directly adjacent to the first operation. That means



* ALBION'S NEW CADMIUM PLATED— ABRADED CASTERS

Now... a new look

for industrial casters, Albion's Cadmium Plated and surface-abraded casters offer a life-long, rust proof finish that never requires painting.

Top plates, yokes and thrust buttons have smooth, satin-like silver finish as tough as the metal itself. They look clean, stay clean and improve the appearance of your product or equipment.

The CPA* finish is available in practically all Albion Industrial Caster series, both rigid and swivel models... at no additional charge!

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**ALBION
INDUSTRIES, Inc.**

ALBION, MICHIGAN

Circle No. 2 on Reader Service Card
FLOW • JUNE, 1954

FEEDING A PRODUCTION-HUNGRY PLANT WITH A



Feeding raw materials to a production-hungry plant is just one of many uses for the multi-purpose Allis-Chalmers HD-5G Tractor Shovel. It receives bulk materials, then carries them directly to mixing hoppers, conveyors or storage as needed. In addition, this powerful crawler excavates for new construction, handles coal, cleans up and loads waste . . . also clears snow and maintains yards and parking areas.

Interchangeable attachments, such as bulldozer blades, special buckets, lift fork, crane hook and trench hoe, add still further to its usefulness.

Tractor Shovels are also available on the three larger sizes of Allis-Chalmers crawler tractors, giving a range of standard buckets from one to four cubic yards — and up to seven cubic yards for light materials.

Let your Allis-Chalmers dealer tell you more about how you can mechanize your materials-handling the efficient tractor shovel way.



Keeps Production Moving—Fast!

The HD-5G feeds bulk materials in exact required amounts for uniform mixture — a full cubic yard at a scoop. In handling light materials, a two cubic yard bucket doubles output. Special fast reverse greatly speeds operation on short runs. This flexible tractor starts boosting production as soon as it's put on the job . . . no waiting for costly installations or changes in plant layout when you mechanize materials handling the Allis-Chalmers tractor-shovel way.



Receives Material at Plant

The HD-5G scoops a heaping load of any material at the unloading trestle, then delivers it directly to mixing hopper, conveyor, or storage area. Truck wheels, idler and support roller bearings are positively sealed against grit and moisture and require lubrication only once every 1,000 hours. This feature alone saves about 30 minutes' greasing time a day.



Builds Storage Piles—Anywhere

This fast-working tractor maintains large stockpiles in the open or under a protective shed. Crawler tracks provide traction and flotation to work right up on the pile, enabling it to put many more cubic yards of material into a given area. Tracks also give long life in cullet and similar material as only steel can.

ALLIS-CHALMERS

TRACTOR DIVISION — MILWAUKEE 1, U.S.A.

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USP

WENDWAY



Automatic answer to your "LIGHT PRODUCT" conveying problems!

If you have a light package, 20 lbs. or less . . . if you must move it smoothly, efficiently, from one process to the next . . . or if you want an automatic selective conveyor system to do the job dependably and at a constant savings in time and manpower . . . then Wendway is for you!

Wendway specializes in moving light goods swiftly, quietly and safely anywhere in your plant. Standardized, self-powered sections of Wendway can be installed virtually anywhere—overhead or in multiple tiers to save your floor space. Wendway will pass through walls, go upstairs or down . . . around obstructions. So . . . whether your problem is assembly, processing, packing, order picking or inspection, you'll find Wendway pays for itself from the day it's installed.



Packaging or assembly operations can be synchronized to production. Thanks to Wendway's variable speed control. Here, fancy cuts are "Wendwayed" from bag loaders through a series of stapling machines and on to shipping boxes.



Overhead routing for sorted or boxed products saves you time and floor space. Wendway takes 'em up, sorts 'em off and brings 'em down, ready for further processing. Individual gear-head motors can be remote controlled to give you complete automatic operation.



Loading operations get a big boost with selective Wendway tiers reaching exactly the areas you want, where you want them, from any part of your plant. Versatility of standardized sections keeps installation costs low, maintenance costs lower.



Wendway's special steel wire belting rides smoothly over powdered iron sprockets mounted on sturdy steel shafting. Can not slip or run out of line. Easy to clean and keep clean.

Belt track and channel of heavy-gauge steel, galvanized for longer life and appearance. Exclusive pure Nylon belt guides and bearing strips for quiet, friction-free operation.

Detailed information on Wendway available on request. USP Conveyor Engineers are also at your disposal.



UNION STEEL PRODUCTS CO.

ALBION, MICHIGAN

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PRACTICAL MANUAL

Continued

taking into account various factors which are probably obvious. One is how much space there is in which to put the item. If the space isn't there to accommodate a larger quantity, could space be provided, and what would be involved to provide more space? Another thing—is this material something that would deteriorate if issued too soon? Still more to think about is the perennial problem of minimizing the cost of goods in process. You have to balance out the fixed charges on goods in process—as well as the potential possibility of deterioration—against the economies of handling in large lots.

Maximum Economical Purchase Unit

After you have determined the maximum quantity that you can issue to production at one time, the next step is an analysis and determination of the largest unit in which you could economically buy it.

Assume that, on some particular material, we decided we could put six or eight tons at the production point at a time. Or possibly the quantity we can issue at one time is a carload. Then maybe we should think about bringing it in loose in a car. If it's a truckload quantity, we could bring in the truckload.

If it's less than truckload, we may think about the fork truck. What's the largest unit you can handle with a fork truck? With present day equipment, 4000 lbs. is just about as much as you can feasibly handle on and off highway trailers or cars. So, if the fork truck method of handling is the one under consideration, you are pretty much limited to a maximum unit of 4000 lbs. Anyhow, the figure that goes in this column is the maximum quantity that is feasible to handle as a unit, through the entire transit phase of handling.

Next is the name of the vendor, the point from which material is shipped, and then some data concerning shipping rates. In the ninth column the cost per 100 lbs. of shipping the commodity to you. The next column is the return rate

for containers and the last for pack number, which ties in with the discussion we are going to have later. After you have collected the data on all or enough of the items that you buy to establish a pattern, the next step is to prepare pack drawings.

Show Full Details of Pack

Chart 5 suggests a form for such a drawing. On the right-hand side, give it a number. Next lines are for the part number, description, quantity per pack. Over on the left, put the gross weight, tare weight, net weight, the tariff number out of which we got the freight rates. Possibly something else convenient to have on this form is the name or number of the department to which this material is issued for first operation. On the next line indicate the container to be used, designated model number, or other means, so that it can be clearly identified. Following that, any packing instructions that may be necessary in preparing and loading this pack. Below that, leave space for a photograph or a sketch of the finished pack, which will be necessary on some of the more complicated packs.

Let's take a look at Chart 6, which indicates the information needed and analysis that should be made of different types of containers that are available. At the top we have container A, B, C, or as many as you may be considering. In the first section, we include the invoice price, the freight in, and other items of original cost. This gives the total cost of each container. Next is data concerning it. You want to know what it actually weighs, the useable volume in cubic feet. Make an estimate of how many trips it will make during its life through this transit phase. Ascertain its rated capacity.

Then calculate Cost Per Trip.

The first item is the Write-off, which is nothing but the original cost, divided by the actual number of trips it will make. Possibly you will need to repair it, and you should put in an amount for maintenance. Then freight. You can take its weight (above), multiply it by the commodity rate we had on the previous data sheet, and get the cost of the tare freight when it's loaded. Next, comes the tare



THAT'LL SAVE YOUR HANDLING DOLLARS?

PALLETAINER'S exclusive locking devices hold sides securely regardless of load. Cannot be accidentally released, cannot be lost. Conveniently located for fast, safe, simple release.



Exclusive design of malleable steel, wide-throat stacking leg affords faster, safer maneuverability and stacking greater unit capacities, higher margin of safety... plus convenience.



Another **PALLETAINER** exclusive is the "Flat-Fold" side feature which makes storage-stacking or packing easier, provides for more economical return shipments. "Flat-Fold" feature saves over 75% of open unit area.

And here are the facts... the **USP HI-LODE PALLETAINERS** are designed and built to easily handle those extra-capacity loads with ease and safety. Their rugged, resilient welded steel construction is second to none. They're virtually indestructible and will last for years under the most severe service.

Union Steel's **HI-LODE PALLETAINERS** are the answer to your materials handling problems; especially if you are interested in saving materials, time, space and man-hours—safely!

... ONLY USP PALLETAINERS OFFER THESE EXCLUSIVE FEATURES

HI-LODE PALLETAINERS are available in a broad range of sizes, types and capacities to meet every conceivable handling requirement. Get the facts from your nearest **USP PALLETAINER** representative today. He will be glad to help you solve your handling problems and save your handling dollars.

USP PALLETAINERS

Manufactured only by

UNION STEEL PRODUCTS CO., ALBION, MICHIGAN

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SHORT CUT TO A LONG HAUL!



Moving 4,000,000 lbs. daily a distance of 1,500 ft. Mercury HUSKIE Gas Tractor pulling fully loaded "Trackless Train" of Mercury Type A-310 Trailers.

"Trackless Train" solves major handling problem at Louisiana sugar refining plant

American Sugar Refining Company of Arabi, Louisiana, moves packaged sugar from plant to dockside faster and at *lowest cost per ton-mile* with the Mercury "Trackless Train" method of horizontal material handling. Multiple loading and unloading of freight cars (formerly used) is eliminated.

Major operating advantages of the "Trackless Train": 1. Loads are always

on wheels . . . readily movable by hand for short distances. 2. The train is not confined to any fixed path . . . can go anywhere that the movement necessitates. 3. Trailers can be suited to the materials to be moved. 4. Material movement can be systematized and tied into production schedules by planning regular routes . . . dispatching trains at stated intervals . . . and centralizing control. Learn how the Mercury "Trackless Train" can speed material movement and lower cost in your plant.



MERCURY—the world's largest builder of industrial haulage equipment and originator of the "Trackless Train."

Write today for literature describing the complete Mercury line and the "Trackless Train" system of material handling.

MERCURY MANUFACTURING COMPANY
4154 S. HALSTED ST., CHICAGO

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PRACTICAL MANUAL

Continued

cost of getting it back to the loading point. Then there's a catch-all, which we call "Other", and Credits. It might be there is some salvage involved, and that gives you a credit every time these containers make the trip. With that cost, and the amount that it handles, you get a cost per ton per trip with each kind of container you wish to consider.

NEW SPEED . . .

(Continued from Page 85)

roll, which is in contact with the end of the belt.

The problem of setting up conveyor systems also involved the transporting of filled cardboard cartons from the packing department to the finished stores department in another building. This was solved by a combination of belt and roller conveyors. At one point a hole was cut in a wall 9 feet from the floor. About 40 feet from the hole a roller conveyor turns 180 degrees around another wall, and then makes a 90-degree turn to a chute which ends at a receiving table.

Much time was saved by the installation of a specially designed elevator to take packages from the finished storeroom on the second floor to the shipping room on the first. Formerly the packages were taken off shelves and loaded into a small truck that carried them to a spiral gravity conveyor which was fed by hand. At the bottom of the conveyor the packages were reloaded onto another truck for delivery to the ultimate carrier.

Today, palletized loads of packages are carried to the elevator by a manually operated lift truck. The elevator floor is fitted with two parallel 9½-inch wide roller conveyors on either side. As the car approaches the first floor the elevator door automatically opens, the pallets roll out onto another set of roller conveyors and are picked up by fork lift trucks.

The elevator door automatically closes and the elevator returns to the second floor.

"WORLD'S LARGEST TRUCK"

USES **VICKERS**® HYDRAULICS for STEERING and DUMPING



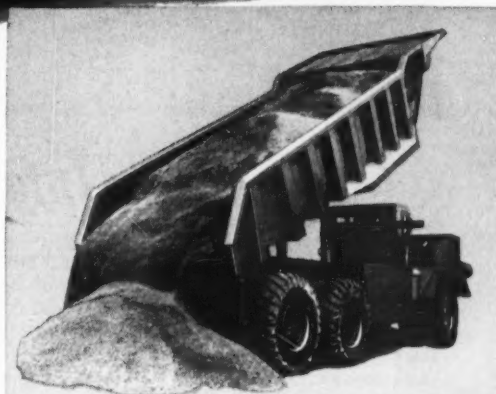
Dart Model 60 Truck is shown carrying full 75-ton payload.

This Dart behemoth with a gross vehicle weight of 240,000 lb is said to be the largest truck in the world. It has two engines totaling 700 horsepower. Everything about it is on a colossal scale.

A new hydraulic circuit was developed by Vickers expressly for Model 60. The driver steers this truck with no more effort than he would a passenger car as the steering gear merely actuates the valve that controls the flow of oil to the steering cylinders. Twin cylinders provide 50,000 lb steering force (at 1000 psi oil pressure) for the dual front wheels.

Dart is thoroughly familiar with the many advantages of Vickers Hydraulic Power Steering having used it since 1938.

Vickers hydraulic equipment is available for all types and sizes of mobile equipment. Ask for new Catalog M-5101.



Vickers hydraulic power dumps the load; twin hoists are rated at 130,000 lb push at 1000 psi oil pressure.

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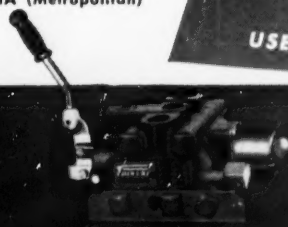
**REPRESENTATIVE STANDARD
VICKERS UNITS
USED ON DART MODEL 60**



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Vane Pump



Balanced Piston
Relief Valve



Multiple
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Check Valve

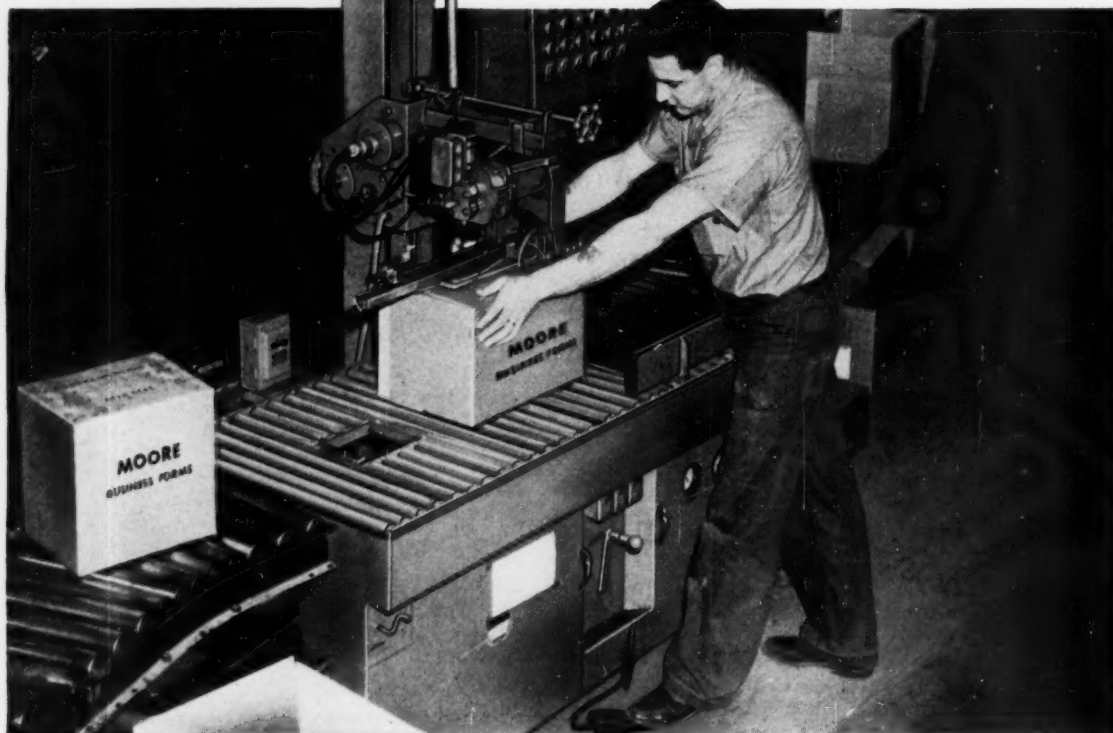
Immersion
Suction Filter

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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MOORE 
BUSINESS FORMS

SAVE \$17,000 IN ONE YEAR



with *International Staplers*

Moore Business Forms, Inc., Niagara Falls, N. Y., is the world's largest manufacturer of business forms. They have found International Staplers to be *cost reduction specialists*. In only one year they have saved \$17,000.00 in their shipping department. Mr. Frank Pethybridge reports the reasons—reasons that will save money in *your shipping department too!*

"Slightly over a year ago we installed an International Stapler plus auxiliary conveyor equipment. Previously, we transported our goods manually on skids and sealed cartons with glue by hand.

"Your semi-automatic stapler simultaneously seals the tops and bottoms of the corrugated cartons already filled with packed business forms. Augmented by allied equipment, this stapler has realized the following operational advantages:

1. Eliminates stitching bottom of cartons before packing.
2. Reduces carton transportation to finishing areas.
 (Knocked-down-flat have replaced assembled cartons.)
3. Eliminates hand gluing in numerous areas.

4. Eliminates manual traffic to shipping department.
5. Reduces rehandling of packaged merchandise.
6. Reduces traffic congestion.
7. Reduces floor space needed for skid storage.
8. Reduces truck-loading time by better shipment marshalling.

"Our experience with your C2E Stapler after one year of operation has proven very satisfactory. In fact, in conjunction with allied equipment, we have already recovered more than 50% of the entire equipment investment."

Well, that's the story, most of it written by the customer in his letters to us. You can profit by the experience of Moore Business Forms, Inc.—investigate the many advantages of International Staplers. There are more than 20 models to suit *your needs*—from manual to completely automatic units. They are *cost reduction specialists*—they will *reduce your shipping costs, too*. Ask an International representative to help you make a cost reduction study of your shipping department. There's no obligation—and you'll be glad you did.

the Royal Family of Packaging

International Staple & Machine Company

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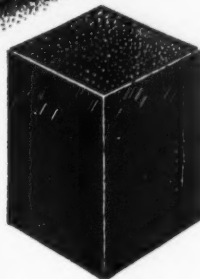
International Staplers

808 East Herrin Street, Herrin, Illinois

PACKAGING AND SHIPPING SECTION

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An Easy Index to This Month's Advertisers

Are you looking for a particular type of packaging and shipping equipment? Listed below are advertisers according to type of product they are advertising in this issue. We have attempted to make your job a little easier by listing them as often as possible. To use this index, find the type

of product in which you are interested . . . turn to the advertisers listed under that product . . . circle the correct numbers on the reader service card, mail it, and you'll get complete information in a jiffy.

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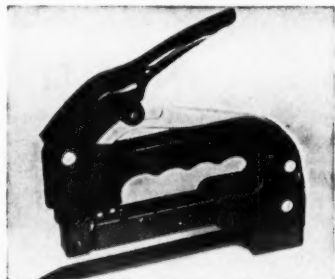
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WHAT'S NEW... in Packaging and Shipping Equipment



Long-Reach Stapling Plier

The P4-8P, a stapling plier with an extra-long pointed clinching blade has been announced by Bostitch. The hand-operated unit is designed for efficient sealing of corrugated containers and is equipped with a sharply pointed blade which, when inserted at the edge of a container, clinches the staple as the driving mechanism forces it through the top flap, leaving only a small slit when the blade is withdrawn. "Three times as long reach", is said to permit more secure closure. It uses $\frac{1}{2}$ ", $\frac{1}{4}$ " and $\frac{3}{8}$ " staples.

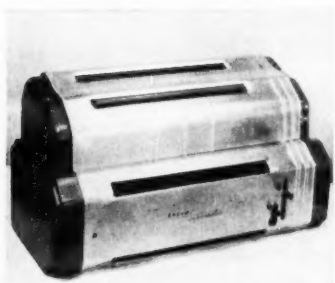
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End-Impact Recorder

Impacto-Graph Corp. has developed a one-way recorder designed for use in freight or passenger cars. Formerly, the firm made only 3-way shock recorders, but found that rail carriers were concerned almost entirely with damage caused by end-shock. This unit, weighing 11 pounds, and measuring $11\frac{1}{4}$ " x $9\frac{1}{4}$ " x $4\frac{3}{8}$ ", gives recordings which may be read in both m.p.h. and "zones". (Zones are standard impact measurements with all railroads.) The recorder will provide a continuous 28-day record.

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Desk-Top Photocopying Unit

Busy shipping rooms can benefit from the Apeco Systematic Auto-Stat, a desk-top unit for copying anything written, typed, drawn or photographed. Only three simple steps are required to complete a copying job: (1) Expose by inserting original form and Auto-Stat paper into continuous copier; (2) Feed exposed sheet and transfer sheet into Auto-Stat, together; (3) Peel copies apart when they emerge. Copies are ready for instant use.

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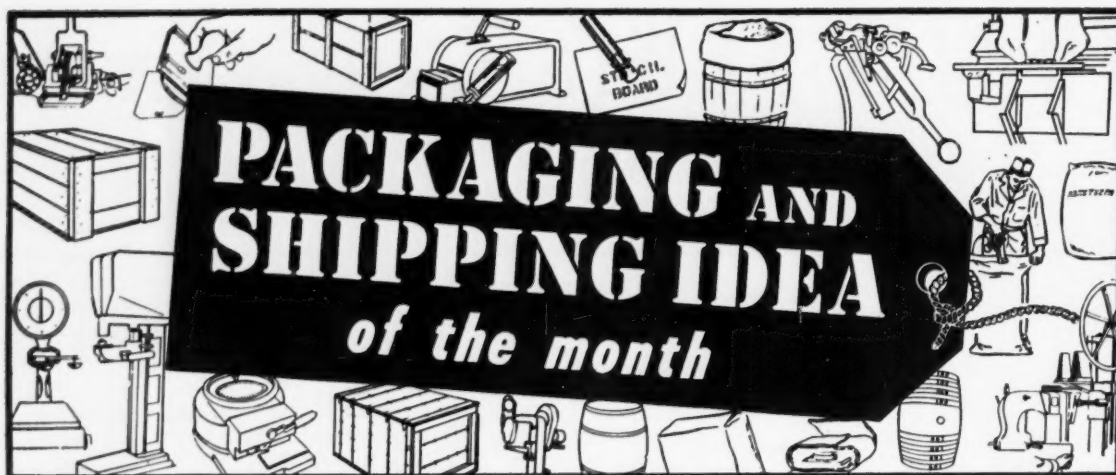


Neoprene Dock Bumper

A low-cost solution to the problem of damaged wood facing boards on truck loading platforms is provided by this heavy-duty DuPont neoprene strip called Everguard. Applied to a dock with ordinary roofing nails, the bumper resembles, outwardly, a half-round molding on a wide, flat base. Actually, it is hollow, with longitudinal inner webs which provide necessary rigidity and proper amount of "bounce." Manufacturer is The Everguard Co.

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(Continued on page 139)



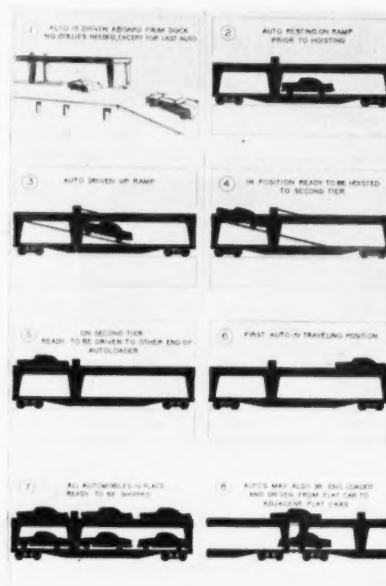
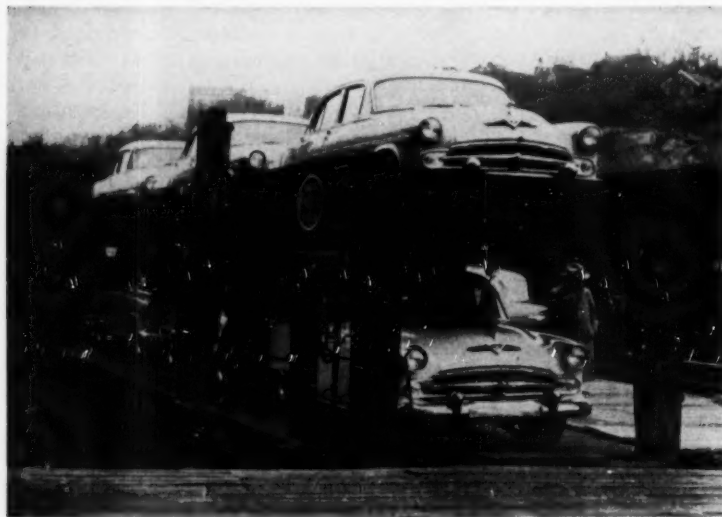
NYC Increases Payload 50%

in transportation of automobiles

A new kind of freight car that carries six automobiles instead of the usual four made its first trip recently from Detroit to New York Central's Kingsbridge Freight Station in the Bronx. In addition to the 50% increase in pay-load, the new car, called Auto Loader, provides more economical loading and unloading than was possible before with automobile freight cars.

The six Dodges which NYC transported to Kingsbridge arrived in excellent condition and were unloaded by a crew of three men in less than thirty minutes.

Courtesy Evans Products Co.

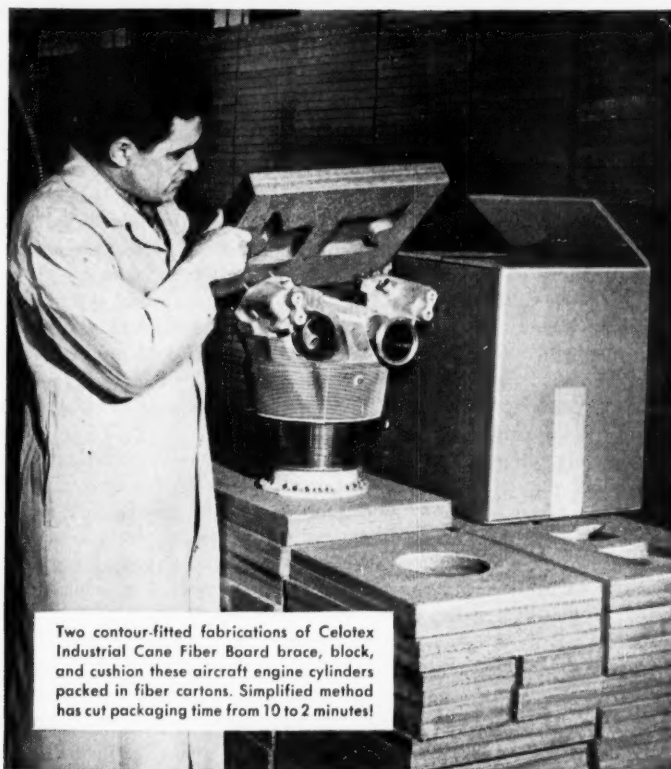


LOADING SEQUENCE

which is used on the new automobile carrying freight car is illustrated in steps 1-7 in the above diagram. Step 8 shows how autos can be "circus" loaded from one car to another when train of auto-carriers is being made up.

READY TO UNLOAD at New York Central's Kingsbridge Freight Station. Although the new car (called Auto-Loader by its manufacturer) has 50% greater payload, it is constructed on standard 53 ft., 6 in. flat car.

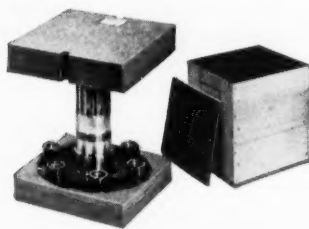
HOW WRIGHT AERONAUTICAL SLICES BIG MINUTES OFF PARTS PACKAGING TIME!



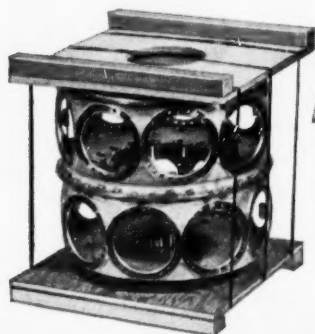
Two contour-fitted fabrications of Celotex Industrial Cane Fiber Board brace, block, and cushion these aircraft engine cylinders packed in fiber cartons. Simplified method has cut packaging time from 10 to 2 minutes!



Power recovery turbines are floated with firm authority between inner packs of Celotex Industrial Board in reusable metal drum.



Polished splines and precision alignment of propeller shaft are completely protected by fabricated Celotex inner pack components in wood boxes.



Fabricated Celotex "donuts" help guard precisely-machined surfaces of Wright engine crankcase in this shipping skid. Crankcase weighs 165 lbs.

Inner packs of fabricated Celotex Industrial Board

- ★ BRACE, BLOCK, CUSHION!
- ★ REDUCE SHIPPING DAMAGE!
- ★ PACKAGE IN 1/5th THE TIME!

Over 100 thousand individual shipments . . . approximately \$120 million worth of engine parts sent to all parts of the world . . . and not a single damage loss due to faulty packaging!

Top this with the fact that up to 80% is chopped off actual packaging time . . . and you have the reason why the Wood-Ridge, New Jersey, engine plant of the Wright Aeronautical Division of Curtiss-Wright Corporation finds such cost-cutting, time-saving, protective packaging benefits in . . .

Celotex Industrial Cane Fiber Board!

Manufactured from long, tough Louisiana cane fibers, this strong board is extremely light and resilient. Because it can be fabricated to exacting product contours, it braces, blocks and cushions with gentle firmness, prevents movement and impact-damage. Its rigidity and strength make the use of lighter, less costly outer containers completely practical.

Outstanding physical characteristics of Celotex Fiber Board: Has a neutral pH value (6.5-7.5), and this low acid content is helpful in minimizing corrosion of contents. Moisture content is between 5% and 8% by weight, far less than other inner pack materials. Requires less costly desiccant. With treatment, it can be made non-dusting, anti-abrasive, and waterproof.

Your packing time . . . your labor and damage costs . . . can be cut considerably by prefabricated Celotex Industrial Cane Fiber packs. For full data, mail the handy coupon *today!*

CELOTEX

REG. U. S. PAT. OFF.

INDUSTRIAL CANE FIBER BOARD

For packaging at its quick best . . .

MAIL COUPON NOW FOR FREE BOOKLET!


The Celotex Corporation, Industrial Dept. F-64
120 S. LaSalle Street, Chicago 3, Illinois

Name _____ Position _____

Company _____ Address _____

City _____ Zone _____ State _____

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SELECTION GUIDE FOR

Standard

BASICALLY, strapping tools perform three simple jobs; tension, fasten and cut-off. No matter how large or how small the device, or on what type of strapping it is used, its basic duties remain one or more of the above three.

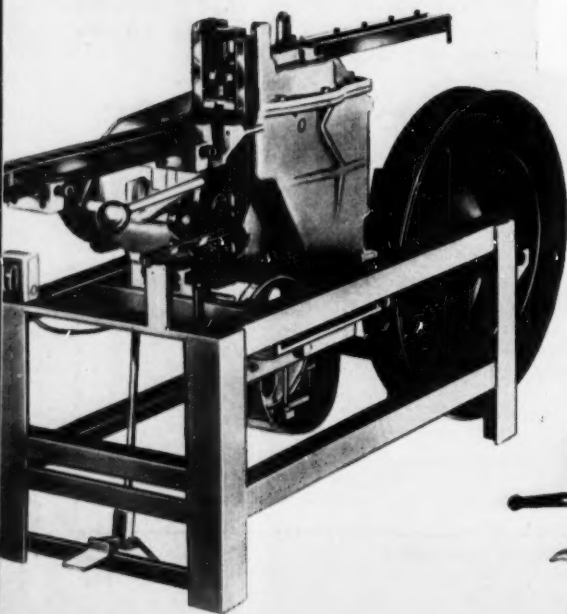
Yet, when a user of strapping looks for a strapping tool to suit specific conditions in his particular plant, he finds himself confronted with an apparently overwhelming variety of one, two and three-handled devices. "Why so many types?", and, "Where do I start in making a selection?" are questions which he might ask many times before making a final choice.

Actually, there are not as many general types of strapping tools as might at first appear, and selection is really not very difficult. First of all, it must be understood that many of the unusual or "special" tools which are in use cannot be selected from a catalog. Most of these are developed through the work of strapping engineers employed by strapping manufacturers. They come as a result of special problems in users' plants. This article will concern itself with standard tools to a much greater degree than with "specials".

Primary variations in tools depend upon two controlling factors: (1) the function to be performed by the strap on which each tool is used; (2) The production rate of other operations with which the strapping job will have to be coordinated.

Function of the Strap

The job which is to be performed by a given strap will be reflected in the choice of the strap itself and also in the tools which will be used. In other words, a strap which would be ideal for a lightweight, small package would probably be ridiculous if used for anchoring a



Strapping Tools

car-load of steel bars or tubing. The same holds true for the tools which are used for tensioning and fastening the strapping.

Steel strapping functions in packaging and shipping activities can be listed under six general categories, each of which requires a different approach toward the determination of the right type of strap and tool. Those categories are as follows:

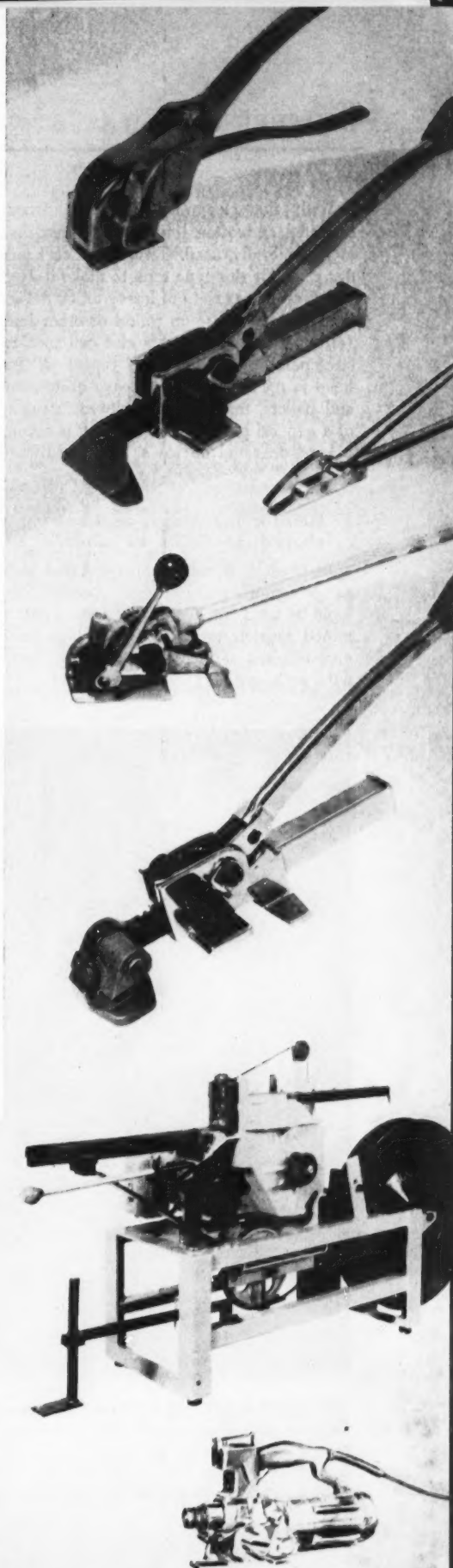
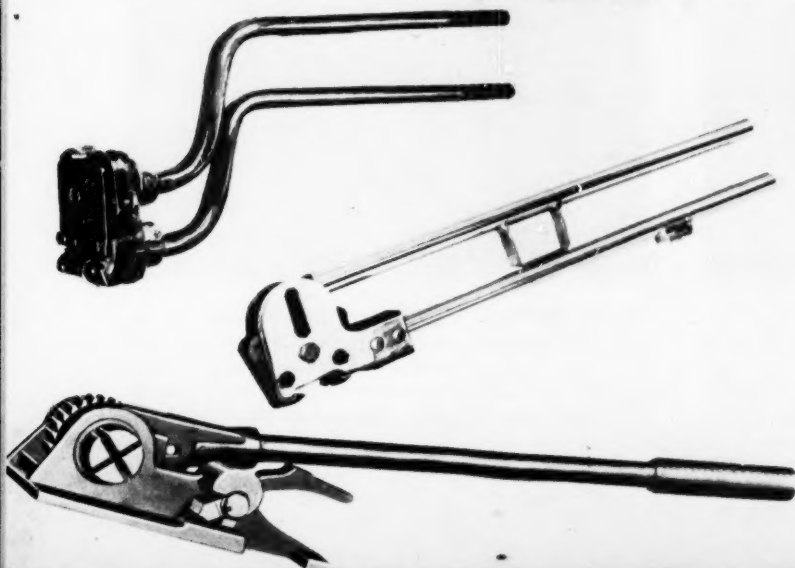
1. Reinforcing lightweight, regular shaped packages and units.

If round strapping is used (on packages weighing less than 75 pounds) 16 to 18½ gauge wire will give best performance and tensioning and fastening should be accomplished with predetermined-tension tools. These tension and tie a knot in the strap in a single forward and back stroke of the operating handle.

If flat strapping is used, light duty, or "tensional" tools are usually recommended, with two tools, a stretcher and a sealer, being used for a single strapping operation. For light-duty strapping jobs, on regular shaped containers or units, feed wheel type stretchers provide unlimited take-up of strap and are adjustable to various gauges. These tools rest flatly on the surface of the item being strapped and the strap is tightened by a pumping action of the operating handle. Sealing is accomplished through use of a hand-operated crimping tool.

2. Reinforcing lightweight, irregular shaped packages or units.

If round strapping is used, the same pre-determined tension tools used for regular shapes may usually be used for irregular shapes.



STRAPPING TOOLS

With flat strapping, rack-type stretchers, hand-operated and often limited as to take-up of strap are most generally used. Two types of heads have been designed for this type tool, to make it useful for applying strap to a variety of heavy units. A "duckbill" head is available for use on round or other irregular shapes (strapping manufacturers also call such tools "footless stretchers" or "pusher-bar" types). A "gripping dog" head is made for use on heavy crates, boxes, cartons, and pallets, making the rack-type stretcher somewhat of a general purpose tool. Sealing is accomplished with a hand-operated device as with feed-wheel stretchers.

3. Reinforcing heavy, regular-shaped packages or units.

In general, it is recommended that heavier than 16-gauge round wire, and lever operated tension selective tools be used for heavy packages. There are predetermined tension tools however which are designed to give efficient service in heavy-duty operations, using wire as heavy as 15-gauge.



STRETCHER AND SEALER or "two-piece" tools are for use with light-weight flat strapping in shipping rooms where volume of production is relatively low. Sometimes a third tool, a strap cutter, may be added to this portable, handy set of strapping tools.

For heavy-duty flat strapping applications, there are two-piece tools which operate similarly to those used for the same work on lighter packages and units. The most widely used type of flat strapping stretchers is the windlass or drum type, which gives unlimited take-up of strap and secures a great amount of tension.

For heavy-duty sealing of flat strapping, there are two types of tools, one with side-action operation and the other a front action device. They make one set of crimps for each stroke. Two strokes are normally required to complete a sealed joint.

4. Reinforcing heavy, irregularly-shaped packages and units.

As with light-duty tools, heavy-duty round strapping tools can be used for regular as well as most irregularly shaped items. They are available for use with wire as heavy as eight-gauge (for packages and units weighing over 122 pounds.)

Both of the head types mentioned for light duty operations are furnished for heavy-duty flat strapping rack-type stretchers. The duckbill (also called pusher-



PREDETERMINED TENSION TOOL, shown in use above, is smallest available for use with round steel strapping. It is recommended for use with 18-19 1/2 gauge wire and for packages weighing up to 75 pounds. Here, it is used to unitize boxes of chicks at hatchery.

Continued



type or footless stretcher) is for use on round or irregular surfaces and the gripping dog is for the same work in lighter packages and units. The front action sealer is usually used with these stretchers.

5. Unitizing regular and odd shaped items.

Skid tools are available for use on both regular and irregular shapes, with both flat and round strapping. Where pallets are used for palletizing, strapping is draped over the load and under the pallet . . . then it is tensioned, fastened and cut. Often, self-unitizing loads can be built up without the aid of pallets, through use

RACK TYPE STRETCHER is designed for use on irregular shaped packages and bundles of large or small diameter. Works directly from coil of strapping and, with a simple twist, will break off strap flush with the seal.

of strapping. This is done with products like lead, zinc, or aluminum pigs, bricks, etc. With such items, bottom units are arranged to support the load just as pallet stringers do. Strapping is applied around the load and under the "stringers" to provide a solid unit easily handled by industrial trucks.

To permit more efficient unitizing, both with and without pallets, strapping manufacturers have developed heavy-duty strapping devices referred to as "skid tools". Often, they are semi-automatic in their operation. (Semi-automatic tools are discussed later in this article.)

An electric-powered skid tool for use with flat strapping



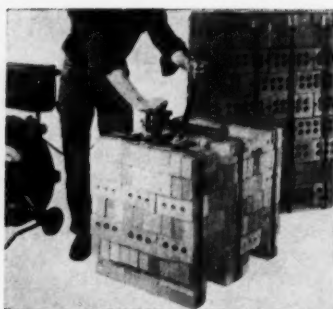
WINDLASS TYPE STRETCHER is for heavier-duty strapping jobs and gives unlimited take-up of strap. Sealer used with it crimps the seal and two thickness of strapping to provide strong unbreakable connection. Strap used here is $\frac{3}{4}$ -inch wide by .035-inch thick.



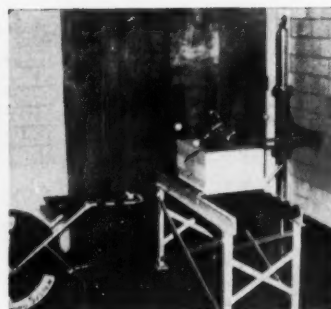
SEMI-AUTOMATIC STRAPPING TOOLS HAVE seal-feed magazines which deposit seal on tensioned strap. One tool tensions, seals and cuts off strap. In the packaging operation shown above, 23 units of pipe are bundled every hour by the two operators.



HYDRAULIC STRETCHER is used at Westinghouse Electric Corp. in packaging of Laundromats. Hydraulic sealers and electric strap dispensers are also available and can be used with this stretcher.



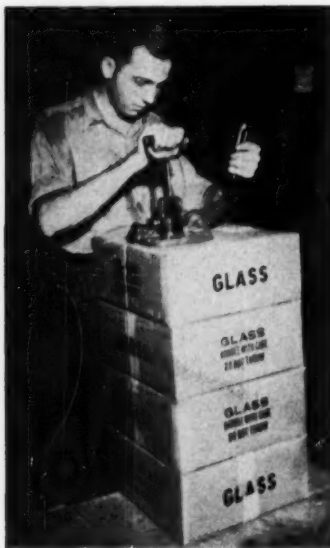
SKID TOOL is semi-automatic seal feed strapping machine. It combines stretcher, sealer and seal dispensing into one tool and is particularly useful on heavy skids, pallets, crates, bales and unit loads.



TOOL MOUNT counteracts the weight of semi-automatic strapping tool. Strapping is dispensed from portable reel at left as required for the job. Seals are fed from magazine mounted on tool.



HEAVY DUTY STRETCHER is required for load stowage jobs. Here, strapping is used for rail shipment of television sets. Keeping entire load strapped tightly together stops movement of individual packages and reduces damage to sets.



TENSION SELECTIVE tool is for use with round steel strapping. Can be used for unitizing glass fixtures, as shown here, as well as heavier, less destructible items.

STRAPPING TOOLS

Continued

was recently introduced.

A skid tool can be adapted for use in vertical position through use of a hook device which may be attached to its nose. The hook hangs from the top of high skids and supports the tool while it is being used on the side for application of strapping.

For relatively low volume operations and other instances where it is felt that two-piece strapping tools are more advisable than the semi-automatic types, specially designed heavy duty stretchers and sealers are available. For heavy skids and coils of steel there are stretchers that incorporate a worm-and-gear design and tightening of straps up to 2" x .050" is accomplished through a cranking motion. Special sealers even have offset handles to permit ease of sealing in hard to reach places like inside coils of strip steel etc.

6. Load Stowage

It is common today to find heavy goods as well as bulk shipments of light commodities protected in transit by use of steel strapping. The principle of this method of load protection is that individual units are bound into relatively large groups to prevent movement of the individual packages. Shock-force is distributed throughout the

load units which are held under control within established limits; thus protecting against sudden stops, starts and car swaying.

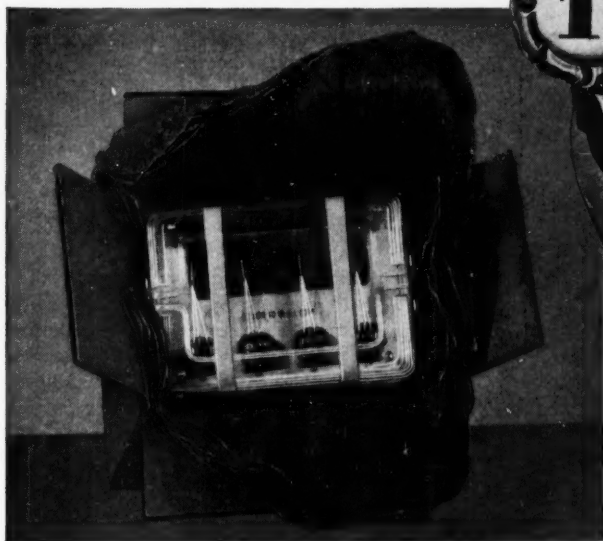
Strapping tools for use in load stowage have been designed to provide greater tensioning power, use heavier strapping while still being kept at minimum weight. In addition, many have been constructed to permit their use in confined, awkward spaces. These tools are the windlass type, using side-action sealers.

Production Rate

In general, it may be stated that the higher the speed requirements of a strapping tool, the greater will be its cost. Thus, for every situation one must establish a "point of diminishing returns" where the cost of added speed overweighs the advantages of faster operation. Your best source for help along these lines is the strapping manufacturer, for he maintains a staff of experienced engineers whose duties include not only the recommendation of proper strapping and tools, but also suggestions for the best methods of incorporating strapping operations into packaging lines, shipping facilities, etc.

A general breakdown of strapping tools according to their adaptability to varying production rates

A Winner with KIMPAK*



Julius J. Puchy, Packaging Engineer
Weston Electrical Instrument Corp., Newark, N. J.

Kimpak'ed Package wins "General" 1st Prize in the National Protective Packaging and Materials Handling Contest! *Mr. Puchy tells why:*

"The winning package (above) saves us over \$20,000 a year in materials and labor alone. But more important still is the fact that it actually ends costly packing, shipping and unpacking damage to our delicate navigational instrument mechanisms."

Why did Mr. Puchy select KIMPAK* in preference to all other packaging materials? Because, as a packaging engineer, he learned that KIMPAK interior packaging material provides greater protection with less weight and less bulk than any other comparable interior packaging agent. Using KIMPAK, he *knew* he could reduce the size of the container, provide maximum protection and, at the same time, cut shipping costs.

Slashed costs 68%—so easy to handle!

KIMPAK made further savings possible by simplifying the packing operation. For KIMPAK is flexible, and as easy to handle as wrapping paper. It cuts and molds easily, and can be tied or taped—so simple to use, it completely eliminates assembly of packing material. It requires far less skill than most materials, and it gives far better surface protection, too.

"KIMPAK," says Mr. Puchy, "does such a good job that our plant uses it for packaging most other sensitive electrical measuring instruments. In fact, we often use it to cushion carrier trays!"

Why not learn *all* the many advantages of KIMPAK, to solve your own packaging problems? Just write or wire Kimberly-Clark Corporation, Neenah, Wisconsin. You'll get immediate attention.

The Packaging Problems

- 1 During shipping and unpacking, delicate mechanisms were damaged by grit, dirt and dust contamination.
- 2 No standard cushioning material had been adopted for either military or commercial customers.
- 3 A cushioning material which would meet highest Weston rough handling specifications was required, but its cost had to be equal to or less than other packing materials.

The Winning Solution

- 1 Shipping and unpacking damage was ended by the application of interior packaging material, KIMPAK, Type 500, plain.
- 2 KIMPAK was adopted as the standard interior packaging material. It exceeded highest military and commercial protective cushioning requirements.
- 3 KIMPAK met all of the rigid Weston rough handling specifications. It protected sensitive instrument mechanisms more completely, yet it cost less than those materials which were used previously.

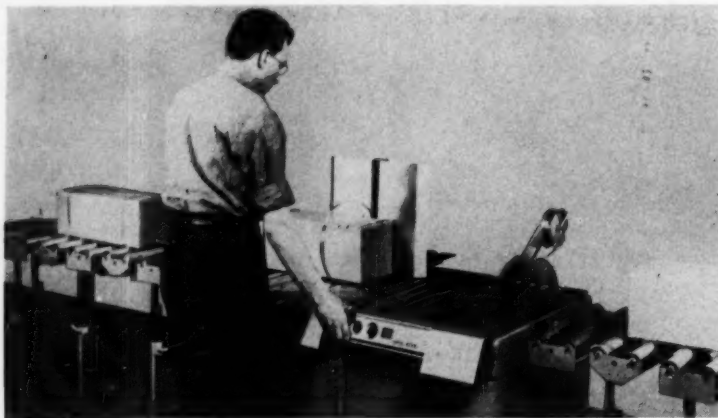
The highly sensitive instrument mechanisms, enclosed within containers by one layer of KIMPAK Type 500 (see illustration at left), were subjected to rough handling tests by the Quality Control Laboratory of Weston Electrical Instrument Corporation. After repeated 30-inch free falls on all 8 corners and 6 sides—droppings on solid steel and concrete surfaces—there was *absolutely no evidence* of any shifting of parts, contamination within the container, or damage to the mechanisms.



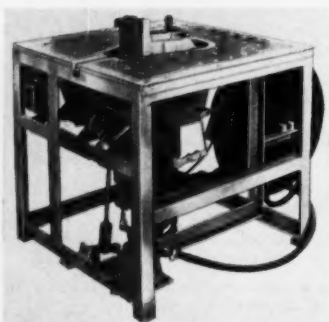
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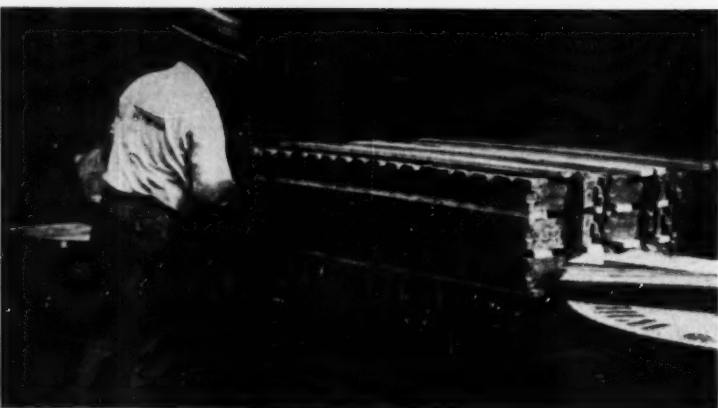
POWERED STRAPPING MACHINES fit into high-speed production lines. Unit shown above feeds, tensions, welds ends, and cuts off strap, at push of button.



BALL TRANSFER TABLE adapts powered machine for use in strapping wire and strip-steel coils. Coils can be fed and removed on conveyors meeting any side of table. Also, coils are rotated easily.



MEDIUM WEIGHT STRAPPING and tool were used for palletization of railcar brake shoes (left and below) because problem was to contain load rather than support it.



might be; hand operated tools, semi-automatic tools, and powered equipment.

1. Hand operated tools . . .

The tensional flat steel strapping industry began shortly after the turn of the century with one basic set of tools, a stretcher and a sealer. This basic set is commonly referred to as "two-piece tools". At first, the tools were awkward and did not provide all the strength sometimes required. Through the years, however, they have been made stronger and simpler. Basically, they are used for reinforcing packages, boxes, cartons, bales, bundles, crates, etc.

Today, two-piece strapping tools are fast operating, lightweight, portable and sturdily built, and they provide excellent service for shipping rooms having neither high volume operations nor heavy-duty requirements.

2. Semi-Automatic Tools . . .

Some strapping tools combine tensioning, fastening and cut-off into one single device, and are referred to here as semi-automatic tools. In the case of round strapping, a single tool tensions, cuts off and ties the strap. In flat strapping, a semi-automatic tool incorporates a seal-feed magazine which deposits a seal on the tensioned strap. The same tool then crimps the seal and cuts the strap.

Pneumatically and electrically operated tools have been developed for production line operations. They, as well as other semi-automatic tools may be provided with tool mounts for easy positioning on successive packages moving along a conveyor.

3. Powered Equipment

Where semi-automatic tools cannot satisfy completely the demand for strapping speed, several types of powered machines have been supplied. All will operate at speeds of 300 to 900 straps per hour over a wide range of applications on a variety of packages.

For round steel strapping, powered machines are available for use on strapping from 16 to 18 gauge. With one of these machines, an operator merely drapes the wire around the package one or more times, as the packaging method dictates, depresses a switch, and the machine tensions to a predetermined degree, makes the tie, cuts-off and is ready for the next package.

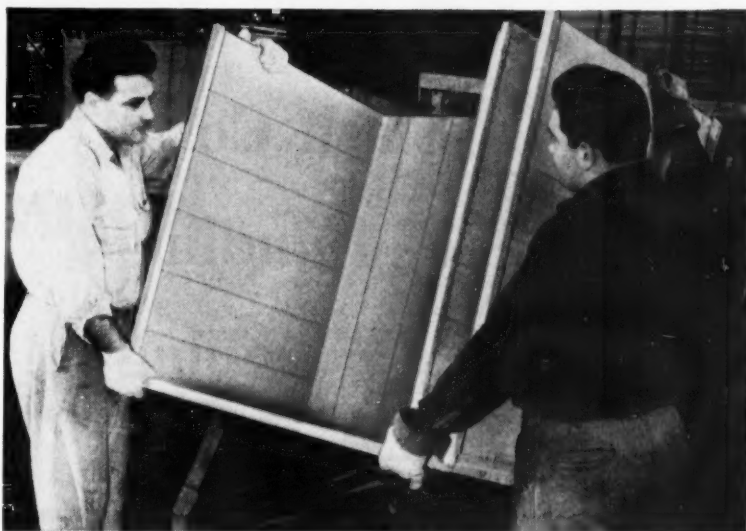
For flat strapping, there are two types of power machines; one is a seal feed machine that automatically feeds the strapping, tensions it, and seals the overlapping ends; the other is an automatic welding machine that does the same job but welds the two overlapping ends. Ordinarily, power machines are installed into production lines, making careful integration of top importance.

A final word of caution . . . the use of improper strapping tools could possibly result in failure of a shipment to reach its destination. The improper use of the right tool can have the same unfavorable results. It will be worth your while to take advantage of a tremendously valuable service provided by strapping manufacturers. That is, the services of factory trained sales engineers. Not only will they help you to select the correct strapping and strapping tool, but they will also help in the development of the best method of use for each individual packaging or shipping situation.

As indicated before, this becomes especially true and important with power machines since they must be installed as integral parts of production lines. With the help of experienced strapping engineers, the method of use and the coordination with other parts of the entire production facilities can be made highly efficient.

FLOW'S thanks to the following companies for information and photographs used in the preceding survey: Acme Steel Co.; Allegheny Steel Band Co.; Brainard Steel Div., Sharon Steel Corp.; A. J. Gerrard & Co.; Gerrard Steel Strapping Div., U. S. Steel Co.; Inland Wire Products Co.; Signode Steel Strapping Co.; The Stanley Works, Steel Strapping Div.

SOLVED with one Generalift Pallet Box



FOUR separate handling and shipping problems

Here's what happened when Chase Brass and Copper Company of Waterbury, Connecticut, switched to Generalift Pallet Boxes:

SOLVED: A STORAGE PROBLEM

Generalift Pallet Boxes arrived knocked down, for easy storage—50 took no more storage space than 8 of the former containers.

SOLVED: A PACKING PROBLEM

Generalift Pallet Boxes assembled, packed and closed—in minutes.

SOLVED: A HANDLING PROBLEM

Generalift Pallet Boxes were made for easy fork-lift handling.

SOLVED: A SHIPPING PROBLEM

Generalift Pallet Boxes held more, cost less, and weighed less than the old style container—a 102-lb. Generalift Pallet Box carried 2100 lb. of pay load.

See how Generalift Pallet Boxes can help solve your handling and shipping problems—at a saving. Write for full details.

Engineered Containers for every shipping need

Factories: Cincinnati; Denville, N. J.; East St. Louis; Detroit; Kansas City; Louisville; Milwaukee; Prescott, Ark.; Sheboygan; Winchendon, Mass.; General Box Company of Mississippi, Meridian, Miss.; Continental Box Company, Inc., Houston.

General Box

GENERAL BOX COMPANY, 1857 MINER STREET, DES PLAINES, ILL.

★ ★ ★ ★ ★

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A System to . . .

Slash Costs of Handling In Shipping

by Joseph C. Kowalski*

THIS paper is not offered as a solution to a specific problem in any one industry . . . Specifically it shall deal with the loading and unloading of box-cars and truck trailers with materials in corrugated cartons or wooden boxes.

Before attempting to outline any example in present handling techniques and their associated costs, it will first show a method by which certain items can be made into unit loads and handled by conventional lift trucks with a clamping device instead of forks. In many industries, at the present time, commodities are not palletized when shipped in box-cars or truck trailers because of the prohibitive costs incurred by paying freight rates on the pallets or in shipping them back. Therefore, many cars and trailers are loaded and unloaded manually. This is both a costly and tedious operation.

The most economical unit load is one in which the

commodity can be stacked in such a fashion as to form its own pallet. Where rectangular or square cartons are handled, the above mentioned unit load can be achieved and successfully transported without the use of a lift truck equipped with a clamping device.

Any unit load which is to be handled in this manner must have openings somewhere in it for the forks or clamp arms to enter. This space should be about 5" to 7" wide and can be accomplished with unit loads as follows:

In stacking the cartons, a conventional pattern can be used. When loading a box-car, a pattern approximating a 48" square should be used because this will allow two rows of loads to be placed across the width of the car. The main difference in this type of a system is in the bottom layer of cartons which should be from 10" to 14" narrower than the layers above it in one direction. This allows for an overhang of the layers

*Joseph C. Kowalski is the first-prize winner in the 1954 Clark Equipment Co. material handling essay competition at Illinois Institute of Technology. He is a graduate student in industrial engineering at the Institute. Second prize went to LeRoy A. Wickstrom, a junior in the same field.

Photo at right shows presentation of awards. Left to right: W. E. Schirmer, vice president of Clark; Kowalski; Wickstrom; and R. G. Owens, dean of engineering at Illinois Tech.



STEEL STRAPPING and STRAPPING TAPE from one source!

*The first
complete strapping service*

● The Brainard Strapping System has been expanded to include a complete line of strapping tapes, both pressure-sensitive and gummed, as well as dispensers for all applications. *For the first time* you can fill all your requirements—whether steel strapping or strapping tape—from one source.

Only your Brainard salesman is in position to give you completely unbiased recommendations—and advise you with authority which strapping methods are best for your particular applications. You do not have to weigh conflicting recommendations. This complete service also enables you to consolidate orders, simplify your purchasing, and save time.

Brainard salesmen, located throughout the U. S. and in Canada, are trained to study your operations, make recommendations, and give your personnel on-the-job demonstrations. Call your Brainard salesman today—or send the coupon for further information.



STEEL STRAPPING—Brainard's complete line of steel strapping, tools, and accessories covers over 1500 items. Strapping a heavy box, shown here, is a job ideally suited for steel strapping, which secures, reinforces, and prevents loss and pilfering.

STRAPPING TAPE

Brainard is the only prime source for both pressure-sensitive and gummed strapping tapes. Both are filament-reinforced to provide high tensile strength, and are designed for strapping applications. Carton reinforcement, shown here, is typical of many applications where tape may be the preferred method. Brainard Strapping Tapes are available in a complete range of sizes.

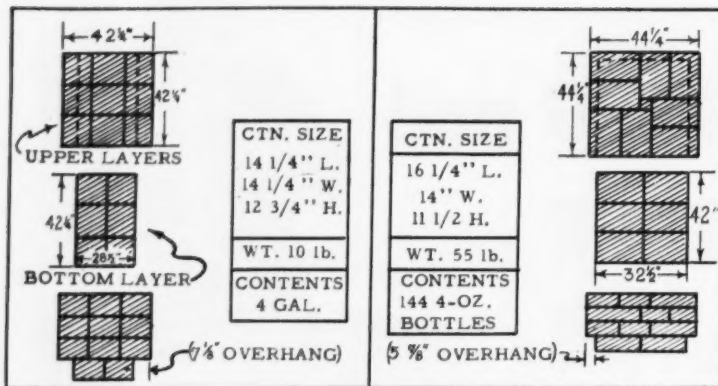


Brainard Steel Division, Dept. K-6
Griswold Street, Warren, Ohio

- ☐ I would like a Brainard Strapping System analysis.
☐ Please send booklet on Brainard Strapping Tape.

Name _____
Position _____
Company _____
Address _____
City _____ State _____

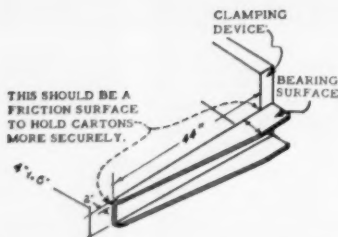
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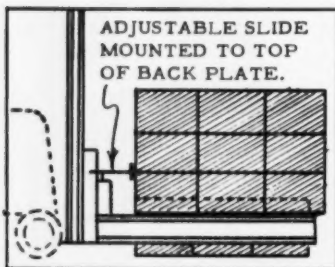
SELF UNITIZING STACKS can be built to accommodate the clamping device described in this article. With clamps in position under overhanging portion of upper layers, top of each clamp provides some support. A fiberboard sheet inserted between the bottom layer and upper layers adds more support and increases load stability.

Slash Shipping Handling Costs

Continued



CLAMPING ARM, 44 inches long, with a bearing surface along the top will be useable on variety of carton sizes and load patterns.



ADJUSTABLE SLIDE can be used when clamp arms are longer than load. This will prevent arms from disturbing rear stacks when removing one from a group.

1	3	5	7		18		16	14	12	10
2	4	6	8		17		15	13	11	9

BOX CAR LOADING with clamp-equipped truck starts with tiers 1-8, then 9-14. Hand lift truck loads 15,

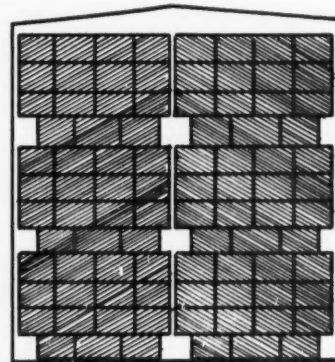
above the bottom one so that the arms of the clamping device can be inserted. After the arms are inserted into this space, the clamping device is then actuated and a force is exerted against the sides of the bottom layer of cartons.

In the case where a light weight material is being handled, this force is all that would be necessary to hold the load when it is raised and transported about. Where heavier cartons are to be handled or where the overhang is about one half the edge dimension, a piece of heavy corrugated paper or fiberboard can be laid on top of the bottom layer of cartons. This board should overhang the bottom layers of cartons by the same amount that the top layers of cartons will. Then when the upper layers of cartons are stacked, the separating board will help to support the portion of cartons which

overhang and will also tend to make a more stable load in case the overhang is about one-half the edge dimension. Then when the arms are inserted they should be brought just up to the fiberboard and then squeezed against the bottom layer of cartons. By doing this, the top of the clamps will tend to support a portion of the load. Whether or not a strengthening board is used the clamps themselves should be used to support a part of the load wherever feasible.

It can be seen that if a piece of fiberboard were inserted between the bottom layer and the upper layers of the load the stability

(Continued on page 134)



END VIEW OF BOX CAR loaded by clamp-equipped truck. Note voids for insertion of clamp arms.

16, 17 and 18 in order. Remaining voids are then hand loaded. This utilizes all space in the car.

GAIR can help

PROTECT YOUR PRODUCT



with engineered PACKAGING

Have you ever counted the hazards your product faces during transportation and warehousing? The rough handling and battering, plus pressure from stacking, are conditions that demand positive protection.

To solve the problem, Gair engineers design shipping boxes to give *two-way protection*:

1. Protection from external damage and shock — by the correct choice of box style;
2. Protection from internal shifting and

breakage — by scientifically-designed inner packing.

In addition, Gair makes sure that the box is simple to pack.

Take advantage of this engineering service . . . without charge. Check with the Gair factory nearest you to learn how. Learn, too, how Gair's assured material supply and delivery service can help give you the best in corrugated shipping boxes.

Ask for our booklet on the sealing of boxes.

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GAIR

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FOLDING CARTONS
PAPERBOARD

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Circle No. 164 on Reader Service Card for more information

North American Aviation uses one packaging machine for many sizes, shapes and quantities. Result . . .

67% Less Packaging and Handling Time

IS manual handling the only solution when a company is faced with the problem of packaging small parts which . . . vary in size from $\frac{1}{4}$ inch to five inches . . . vary in type of product from washers and rings to bolts, nuts, screws, pins, etc. . . are packaged in differing quantities, depending upon individual orders?

At North American Aviation's Columbus Ohio Division, manual packaging, in spite of its high costs and low speeds, seemed for a long time to be the only sensible way to prepare small aircraft parts for shipment or storage. The installation of an automatic packaging machine has eliminated practically all manual operations, however, and has resulted in time savings of more than 67%.

Old Method

The former procedure required that pre-made moisture and vapor-proof bags be used in the packaging

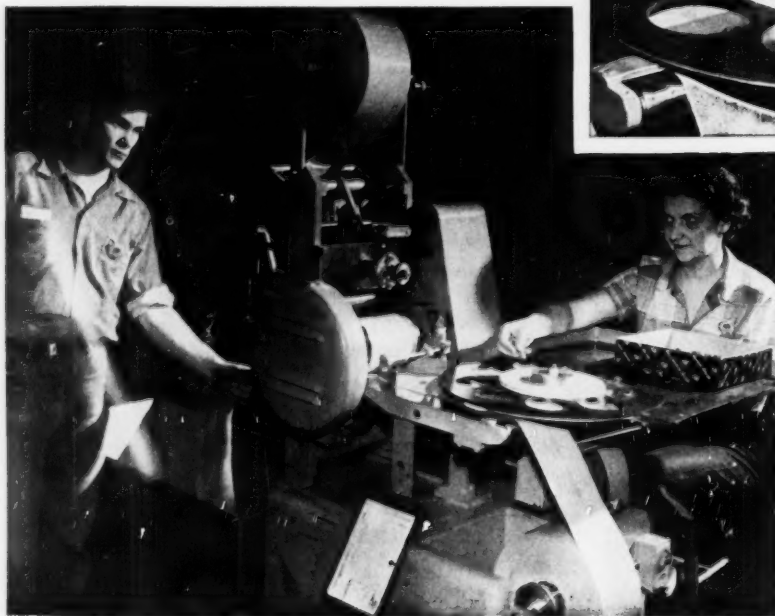
operation. Before being filled, the bags were first run manually through an addressing machine. Proper quantities of specific parts to be packaged were counted as they were deposited into each bag. Then, the filled containers were sealed manually.

Present Method

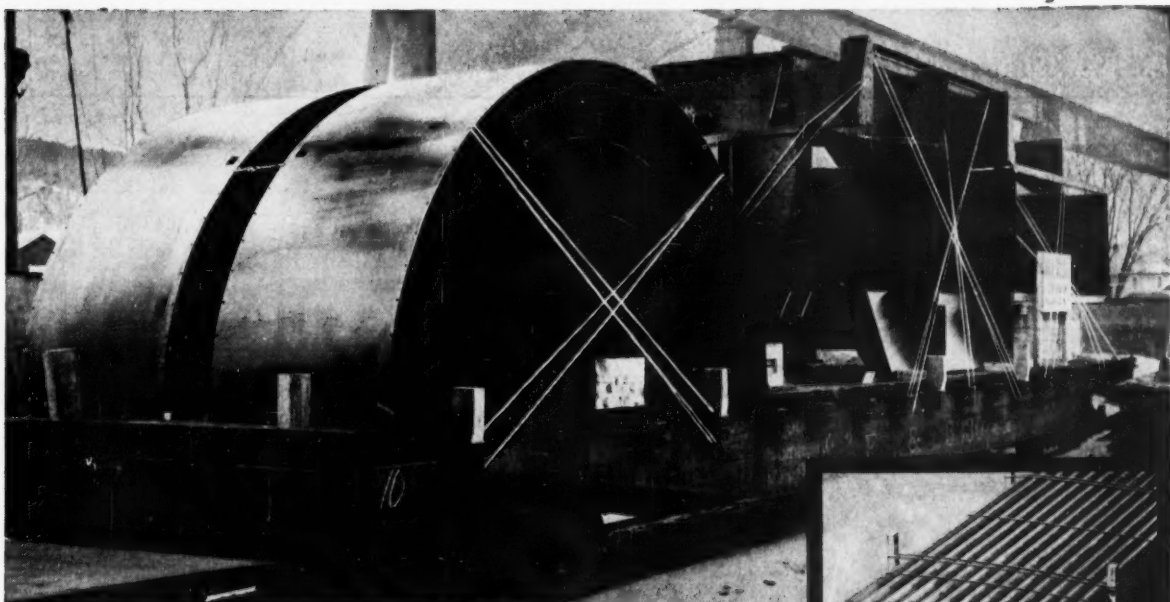
The packaging machine now being used has eliminated all manual jobs except that of counting-out quantities to be packaged. With one or two operators (depending upon speed and quantity-per-bag) the machine makes bags, imprints part numbers and similar



MASONITE DISC, into which nine holes have been cut, rotates clockwise over metal plate as operator inserts rubber "o" rings. Here, there's one ring per package.



♦ **PACKAGING MACHINE** which has permitted more than 67% time-savings in small parts packaging and shipping operations at North American Aviation, Inc.



GERRARD

Ties anything you've ever seen

● Regardless of the size of the bundle—pocket-sized package or cumbersome pallet of castings—Gerrard has a tie for it in the size and type you need. And as for shape, Gerrard Round Strapping turns any corner smoothly, ties any shaped crate or bundle snugly and securely.

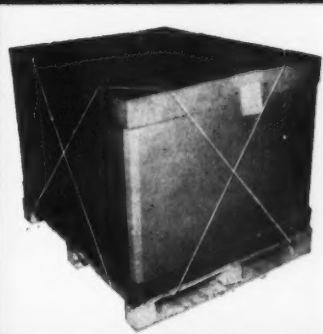
In addition to doing the best job of tying, USS Gerrard Strapping offers you real three-way economy. Man hours are reduced since neatly palletized bundles of machine parts, forgings or steel pipe are easier to handle, easier to stack.

Inventory is simplified, too. You need never recount the units in a bundle once they've been tied together, whereas loose pieces need constant retallying every time they are moved.

Last but not least, you can make Gerrard your *single* source of supply for both Round and Flat Steel Strapping. You'll simplify your paper work, using one purchase order for all your strapping. And by combining shipments of Round and Flat Strapping in a single carrier, you'll realize an additional savings in freight charges.

Contact a Gerrard packaging engineer now. Let him advise you about the tying method best suited to solve your tying problem, safely and economically. His advice is free, a service to you. Meantime, send for these free brochures—USS Gerrard Heavy Duty Flat Steel Strapping System, and USS Gerrard Round Steel Strapping System.

GERRARD STEEL STRAPPING DIVISION, UNITED STATES STEEL CORPORATION
2937 West 47th Street, Chicago 32, Ill.



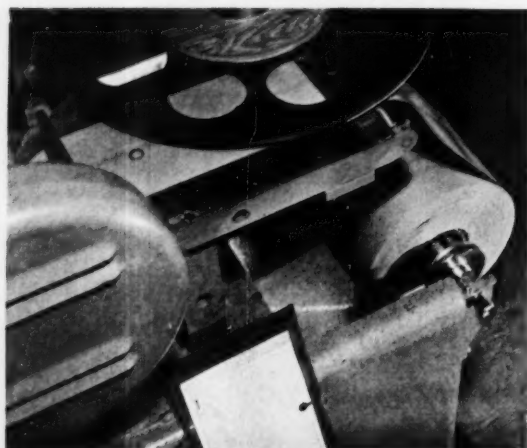
USS GERRARD

Round Steel **STRAPPING** Flat Steel



UNITED STATES STEEL

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REVOLVING MASONITE DISC pushes ring along metal plate to cut-out section over moving strip of bag material. Photo above shows one ring about to drop onto paper and another just prior to passing under heat sealer where covering strip is applied.



MARKING DEVICE is mounted on back of packaging machine. Bag material from upper roll passes between ribbon and double platen. Information is imprinted at proper intervals for the size bags which will be made.



SIX-DIGIT COUNTER keeps count of number of individual packages which machine fabricates and fills.

information, inserts any given quantity of pieces (usually one, two, five or ten) and then seals the bags . . . all automatically.

At North American two types of bag materials, foil-lined and polyethylene-lined, are used in the packaging of small aircraft parts. Both types are purchased in rolls five or seven inches wide (depending upon the size bags to be made) and in lengths which may vary from several hundred feet to more than 1000 feet.

Two rolls are used at one time on the packaging machine, one mounted on a spool near the bottom of the equipment, and another near the top. The bottom roll feeds up and over a steel roller, across a flat table-like surface beyond which it meets the sheet fed from above. (The sheets become opposite sides of bags).

As the material from the bottom roll moves horizontally across the flat area, before meeting that from above, parts are deposited on it in groupings of proper quantities to be packaged. Here's how that works:

A stationary thin metal plate (round in shape) is mounted on a shaft to one side of the moving belt of paper. A segment of the section of the plate which extends over the moving paper has been cut out. Directly above the stationary plate and mounted on the same shaft, is a rotating masonite disc through which nine



CONTINUOUS STRIP of bags is folded back and forth in shipping box. Note perforations between bags.

holes (evenly spaced along the outside edge) have been drilled. Parts to be packaged are deposited into these holes, and are pulled along by the rotating disc as it moves over the metal plate. At the cut-out segment of the plate, parts drop onto the moving paper and are carried to the bag-making section of the machine. They are thus properly spaced to permit bags to be actually constructed around the product.

The upper roll feeds down from the top of the machine and on its way to the point where bags are made, passes vertically between an ink ribbon and a metal addressograph plate on one side and a small platen on the other. Mounted on a coiled spring, the platen presses the paper roll against the Addressograph plate, thereby printing part number and other information on the outside surface of the paper.

Both belts of bag material, (the printed paper from above, and the sheet from below on which parts have been deposited) then pass through an electric heat-sealer where all four edges of each bag are sealed at one time. The material is sealed under pressure at a temperature of 400 degrees F for foil, and 350 degrees F for polyethylene.

At the same time that heat and pressure are being applied, the sealed package is perforated by a knife mounted in the heater. The perforation is made at either five or seven inch intervals, depending upon width of paper in use, and size of packages desired. In other words, individual package units are five or seven inches square. Packages may be stored or shipped in strips, or they may be separated into individual units merely by breaking the perforations.

A standard six digit counter has been mounted on the machine to give an accurate indication of the total production on any order. It is actuated by the same mechanism which prints the bags.

Portability an Important Feature

The machine is mounted on rollers to permit its being moved anywhere in the plant, thus greatly reducing the amount of small

(Continued on page 148)

53 YEARS OF BETTER BOXES — "THE American WAY"

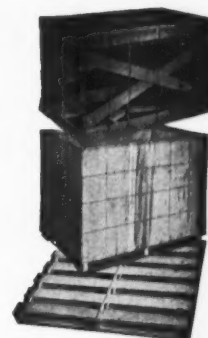
solved...
famous acid bottle "case"



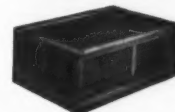
2 or 3 bottles actually travel FREE on savings in cost and weight of this new American Wirebound design. Beats former nailed-wood case for economy.

New American "Wirebound" Costs Less, Weighs Less

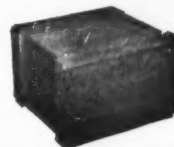
Big news! First important wood container improvement in years for handling bottled products. Brand new American Wirebound design primarily for Firestone's plastic, battery-acid bottles. **Save 20% in weight, and costs less** than former nailed-wood case. Included hand-holed ends and compartmented interior. Lid can be "engineered" to case for shipping. Acid-resistant coating is applied for protection. Send us **your** bottles for a sample container and quotation. This may be the solution to your own bottle "case". Call or write for details.



American Wirebound Crate,
Tote Box, Pallet



American Fibreboard Box



American Nailed Wood Box

★ Thousands of acres of timber, two veneer mills, two great plants in Cleveland, Ohio and Marion, S. C.



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1909 W. 3rd Street Phone: SU 1-5200
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Another Triumph of Derby's Designing and Engineering Skill!

THE MEDIUM PRICED

**Super
 DERBY
 "152"**



**SENSATIONAL DISPENSER
 DELIVERS PREDETERMINED LENGTHS
 OF GUMMED TAPE UP TO 30", (1" TO 3" WIDE)**

A DERBY FIRST

Stainless steel cut-off blade,
 guaranteed for life of machine.

Priced far lower than any machine of comparable quality now on the market, the new Derby "152" has amazing versatility and durability. Its exclusive Derby "Moisture Control System" provides a completely moistened tape every time—and its unique brush design makes unnecessary the usual two brush arrangement. For industrial packaging, specify Derby "152".

See your dealer or write

LOOK AT THESE QUALITY DERBY FEATURES

- Exclusive spring clutch feed
- Visible auxiliary water reservoir
- Adjustable, variable-length handle
- Larger interlocking side frame construction
- Measuring feed stop
- Automatic tape cut-off
- Visual measuring scale
- Water heater available at extra cost

DERBY SEALERS INC.

Derby, Connecticut

SLASH COSTS . . .

(Continued from page 128)

would be greatly increased. If bottles or cans are being handled, it may prove advantageous to form the bottom layer in such a fashion that the bottles or cans inside the cartons are laying on their side. By doing this more pressure can be exerted against them than if they were in the vertical position. In some cases when the height of the carton is rather small it may also help to turn it on its side to gain a little more room for the clamping arms to enter.

As for the clamping device itself, it is basically of the standard design which can be bought and attached to almost any make of lift truck. The clamping arm should be selected so that it can be used on a variety of carton sizes and load patterns. In the case where a 48" square load pattern is approximated, it is advisable if possible to make the length of the bottom layer a few inches shorter than the

Cut packaging costs with **INSTANSEAL®** packaging envelopes!



**Faster, Safer
 Sealing...**

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 FOR
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Save Time and Money...

Here's a packaging envelope that seals instantly and securely - by pressure only - no moisture needed.

Reduces hand operations. Saves up to 50% in time and labor over other packaging methods.

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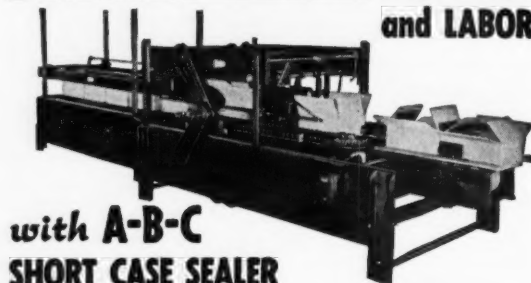
THE STANDARD ENVELOPE MFG. CO.

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 134



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 FLOOR SPACE
 and LABOR**

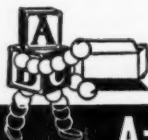


with A-B-C SHORT CASE SEALER

Save two-thirds of your valuable floor space with the A-B-C Short Case Sealer—with increased packaging efficiency, more speed, less expense... Automatically glues, folds and bottom flaps of shipping cases in one operation. Made in eight models to fit any production requirement. Hot air heaters dry the glue in one-half the time. Speeds up to 30 cases per minute.

TOP QUALITY CASE HANDLING EQUIPMENT

Whatever your packaging job, A-B-C has a production proved machine for you—case sealers, unloaders and unscramblers, side sealers, and hand gluers.



**WRITE NOW FOR DETAILS
 AND FLOOR PLANS**

A-B-C PACKAGING MACHINE CORP.
 QUINCY, ILLINOIS

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FLOW • JUNE, 1954

upper layers. A clamping arm length of 44" will probably be found to be the most accommodating for a large number of load patterns. The arms should also be so designed that they have a bearing surface along the top.

If the 44" long clamping arm should be too long for some load patterns and there is enough margin between the truck capacity and the load handled then the arms may be inserted just far enough so that any load behind is not contacted. Care should be exercised in doing this because a greater load will be imposed upon the truck since the load center will be moved forward. When this method is used, a marker should be mounted on the back plate to aid the operator in inserting the arms the proper amount.

It is obvious that if the above outlined method is to be successful a great deal depends on the amount of pressure that the arms exert on the cartons in the bottom layer. Therefore, a clamping device that can be adjusted for pressure should be selected. Some clamps on the market at present have an adjusting screw which must be turned to change the pressure. This method will be satisfactory only when the adjustments do not have to be made frequently, (i.e. where a lift truck handles the same commodity and load pattern for from 4 hrs. to 8 hrs. per day.)

Pressure Adjustments

However in most industries, the same lift truck will have to handle different load patterns and commodities during a day. For this reason, it would be of great convenience if the lift truck operator could make pressure adjustments. Without too much difficulty, I believe that a device could be developed and installed on the lift truck which could be pre-set by the operator or a dial type that would be calibrated in pounds. At the outset a list of loads and corresponding pressures or forces would have to be made up and distributed among the operators. After a while the operators would get to know the values and they would only have to refer to the chart for new items.

The discussion up to this time



Babying Your Products is the Special Talent of Gaylord Boxes

Gaylord Boxes cradle your product in *safety* from packing line to the end of the trip.

This positive protection is a natural result of Gaylord's specialized approach to container engineering. Successful experience and tireless ingenuity combine to produce quality boxes that are exactly suited to your particular packing needs.

Many of America's leading manufacturers have learned to depend on Gaylord Boxes. How about you? For information and cooperation, phone your nearby Gaylord office. It's listed in your phone book.

Gaylord Container Corporation

GENERAL OFFICES
SAINT LOUIS, MO.



SALES OFFICES
COAST-TO-COAST

CORRUGATED AND SOLID FIBRE BOXES • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS • FOLDING CARTONS
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These labels were printed and marked in one operation

(at the rate of 100 per minute)

Preparing quantities of shipping or product identification labels for a multiple shipment is a costly, time-consuming operation. But not for those shippers using the Weber KC-E Label Printing and Addressing Machine.

For instance, in 30 seconds the KC-E can print 50 labels and fill in the consignee's address at the same time. It also counts the labels to give you a check on shipment quantity. It even cuts them to the exact size you want. The KC-E prints from an inexpensive stencil that can be die-cut to reproduce your present label. Variable information is then typed in.

If you are now preparing quantities of labels with the same information, it will pay you to find out how the Weber KC-E can save you time and labor. Take advantage of the offer below.

another

Weber

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Weber Label and Marking Systems
Div.—Weber Addressing Machine Co.



Clip this to your letterhead for sample packet and folder.

Name _____
Title _____
Weber Label and Marking Systems
Dept. F-11, Mt. Prospect, Illinois

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SLASH COSTS

Continued

has revolved about a pattern approximating a 48" square. This is the pattern that is best adapted to shipment by box-car. I believe that the same method outlined above could be used where truck trailers are used for shipments by varying the load patterns.

Most trailers have an average inside width of 7 to 7½ feet. A load pattern approximating either a 42-inch square or a 42 by 48-inch rectangle could be used inside the trailer to get two rows of loads across the width of the trailers. The inside length of the trailers is 20 feet to about 35 feet. In loading the trailers, a lift truck with a six-foot mast and clamping attachment could be used. It is just a matter of bringing the loads into the trailer and dropping them in place. In most cases the loads would probably be stacked two-high inside the trailer. Any space left between the last load and the doors would have to be loaded by hand. The unloading operation would just be the reverse of loading.

Loading, Unloading

Loading and unloading of box-cars would be the same as with loads which are palletized.

In an 18-tier load, tiers 1 thru 8 are first loaded and then tiers 9 thru 14. Tiers 15 and 16 would then have to be loaded either manually or by means of a hand lift truck with a clamping device. Tiers 17 and 18 are then loaded and the resulting void space would have to be hand loaded. Unloading would be just the opposite. At least 80% of the box-car could be loaded or unloaded by means of the lift truck with the clamping attachment.

From the standpoint of economy and ease of handling, it is best if loads are not tiered more than two high. However, in some instances it may be necessary to tier three high. This is especially true when the commodity being handled is relatively heavy. It is necessary to leave some void spaces for the

Here's how to close MULTIWALL PAPER BAGS



FOR lower production costs ... stronger, neater closures ... ability to get out rush orders in a hurry, you can't beat Union Special Bag Closing Machines! Specially built to stand up under heavy production schedules, these machines provide the high output rates needed to meet modern competitive conditions.

In the Union Special line, it's easy to find the right unit to meet your requirements. ASK FOR RECOMMENDATIONS.

SEND FOR THIS BULLETIN!

It's easy to find just the right unit to meet your individual needs in Union Special's big line of bag closing machines. Ask for a copy of Bulletin No. 200, "UNION SPECIAL FILLED BAG CLOSING MACHINES."



Union Special
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FLOW • JUNE, 1954

arms of the clamping device to enter. Whether or not dunnage would be required in these spaces would have to be determined experimentally. In this type of loading, the weight of the upper layers of cartons will tend to hold the cartons in the bottom layer in place. If it is found that dunnage is required, it can be made up of some pieces of cardboard although it is not believed that the spaces would have to be filled completely.

Another Method

Another method of securing the bottom layers of the individual loads may be by means of new pressure-sensitive tapes now being developed. The tape could be folded lengthwise down the center so that the adhesive surfaces will be on both sides or, tape with adhesive surfaces on both sides can be purchased. The tape can then be placed on the top surface of the bottom layer of cartons. Then when the next layer is put on top, the bottom surface of the cartons will contact the adhesive on the

folded portion of the tape and the two layers will be held together. In some instances where the cartons will not be re-used, a dab of glue will serve the same purpose.

Any spaces that might be between the loads and the walls of the box-car must be either packed with cartons or with dunnage, such as corrugated paper, if the space is narrow, or the loads could be banded together with steel strapping. The same methods used for shipping in the box-cars could also be applied to shipment by truck trailer.

Another consequence of this type of loading is that some space is taken up by the spaces necessary for the clamp arms. This lost space will be about 10% when the loads are tiered two high in a box-car, to 15%. These figures are assumed three high. In the case of a trailer which should probably have loads tiered only two high, the lost space will be between 10% and 15%. These figures are assuming that the box-cars or trailers were loaded manually from wall to wall and roof to floor. Where be-

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- **SO FLEXIBLE** . . . Conforms to any shape.
- **SO CUSHIONY SOFT** . . . Absorbs transmission of shock, vibration and pressure damage.
- **SO LOW IN COST** . . . You can use it freely

Industry's newest 100% flexible wrap material gives your products the protection they need from jars and jolts at new low costs! SOF-RAP is a multi-wall wrinkled cushion material that provides stretch and permits "slippage" . . . safeguarding against abrasion damage from friction and chafing. Soft-resilient inner cushion is strip-laminated to a tough, durable protective outer wrap that resists tears and punctures — perfect for exterior-interior packaging. Cushion sheet is also available without outer sheet backing for use where only interior protection is required.



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Counterboy ADJUSTABLE MOISTENING CONTROL:

- Protects your Product • Saves your tape • Saves your labor costs
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The counsel of Better Packages' 70 Counterboy field experts on materials and methods is yours for the asking. They can help you:

- Reactivate all the glue on your sealing tape • Select special purpose tapes
- Train employees to apply tape correctly
- Saves time and tape • Systematize your tape closure procedure



JIM VALETIN, a typical Counterboy man, has an enviable record of helping management utilize their shipping cartons as effective selling tools. His broad packaging knowledge is based on many years spent working with shippers, first in Chicago, later in southern Ohio and currently in Missouri, with headquarters at St. Louis. Your Counterboy man is listed in the yellow pages of your phone book. Call him today.

Better Packages, Inc.

SHELTON, CONN.

WORLD'S LARGEST MANUFACTURERS OF TAPE DISPENSERS

FREE WRITE FOR TECHNICAL BULLETINS:

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- ☐ #3 Tape Moistening Requirements for Various Carton Surfaces
- ☐ #5 Gummed Tape Glues and Adhesives
- ☐ #7 Superiority of Gummed Tape Closure
- ☐ #9 Tape Applications — Building Strength from Weakness
- ☐ #11 Hot Water versus Dry Glue
- ☐ #12 Carton Sealing — The Easy Way
- ☐ #13 Parcel Post Wrap
- ☐ #16 Tape Widths and Weights

☐ Send us a Counterboy man to survey our Methods and Materials

Company _____

Signed _____ Title _____

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Basic "4-poster" idea makes tare-less, low-cost unit pack

A Signode unitizing method that can work for you!

Knowing how to do a job makes doing it seem simple. For example, devising a self-unitized pack of corrugated cartons. Signode Packaging Engineers adapted a basic unitizing idea to the job. A base of cartons was laid in the jig. Four corrugated "posts" were placed—one at each corner. The rest of the load of cartons was stacked on top the posts—and the entire load was bundled tightly into a tare-less, low-cost, self-unitized pack with Signode Steel Strapping!

Can self-unitized methods cut your packaging and handling costs? You can find out—without cost to you in any way! Ask to have a Signode fieldman call. In the meantime, send for our folder showing 6 BASIC WAYS OF UNITIZING.

SIGNODE Steel Strapping Co.

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Offices Coast to Coast—Foreign Subsidiaries and Distributors World-Wide
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SLASH COSTS

Continued

fore, the cartons were shipped on pallets in box-cars or trailers, this new method of loading will not cut down on the capacity and may even increase it since the pallets themselves took up some space. This space can now be filled with the commodity being shipped.

An example of what it costs one industry to handle incoming bottles and cans by the manual method of unloading box-cars and trailer trucks is seen in the operations of Helene Curtis Industries for the year 1953. Bottles are received in corrugated cartons both by box-cars and trailers. Also a large quantity of filled cans are received after being filled on the outside. The cars and trailers, in most cases, are unloaded in the yard where there are no dock facilities. None of these incoming goods are palletized so it is necessary to handle each carton by hand.

Unloading Shipments

Most shipments are unloaded by two men who stack cartons on pallets. A fork lift truck delivers the loads to the warehouse where they are stored until bottles are to be filled. Cans are filled elsewhere but they are unloaded in the same manner and held in storage until ready for shipment.

At the present time, an average figure for unloading a box-car may be taken at 8 hrs. This then results in 24 man hrs. plus 8 lift truck hrs. for the job of unloading one car. Trailer trucks are unloaded in the same manner and this operation takes about 3 hrs. This then results in 9 man hrs. plus 3 lift truck hrs. Using a wage rate of \$1.50 per hr. the result is that it costs \$36 per box-car and \$13.50 per trailer for labor alone.

During the year 1953, approximately 165 box-cars, and 350 trailers were unloaded. The cost of this operation for the year then came to approximately \$17,415 plus 3870 lift truck hours. As long as the shipments continue being

(More on page 144)

FLOW • JUNE, 1954

PACKAGING & SHIPPING NEW EQUIPMENT . . .

(Continued from Page 115)

Quick Sealing Envelopes

Standard Envelope Manufacturing Co. has announced the development of envelopes claimed to

reduce hand operations and save up to 50% in time and labor. The envelopes seal instantly and securely by pressure only, no pressure is needed. The manufacturer reports that the envelopes can be tailored in any size and weight to suit individual packaging requirements. In addition, they can be printed in any

number of colors to give added merchandising value, to permit faster identification of contents and to make directions clear and easy to understand.

Circle 193 on Reader Service Card for more information

Easy-to-Use Strap Breaker

The Lidseen Co. announces the development of the "Buster" Strapbreaker, a tool for breaking steel strapping cleanly and easily. The device has no moving parts and is constructed of heat treated forged steel. Weight is about 2¾ pounds and over-all length is 19-inches. In use the tapered point is inserted under the strap to be cut and pushed to the base of the cutting slot. An easy pull or push cuts the strap. It is claimed that there is no danger of flying sharp edges cutting personnel when the Buster Strapbreaker is used.

Circle 194 on Reader Service Card for more information

Non-Skid Ink for Packages

A non-skid printing ink that is said to minimize sliding, shifting and extra handling of paper bags, sacks, corrugated cartons and other packages has

How to Protect Your Goods

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Here are the facts on how a super-strong, waterproof paper may be your answer to safe, lower cost shipping and storage. Read how rugged Fibreen, in rolls or blankets, gives new, low-cost protection from rough handling, water, moisture, dust, grit and staining. See how it provides protection for machinery, tools, steel, aluminum, rope, textiles, furniture, abrasives, leather, rubber and many other products.

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Is Common
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STEN-C-LABL will send you a brochure packed with excellent ideas, fully explaining their inexpensive and SIMPLE method of reducing your labor costs per shipment, eliminating mis-shipments and speeding up the handling of MULTIPLE shipments in your shipping department.

Whatever your present method of handling this time-consuming job, you will find some ideas in this brochure which will be of value to you.

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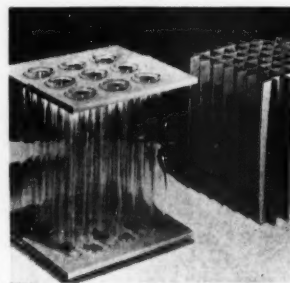
DEPT. A, 287 N. SNELLING AVE., ST. PAUL 4, MINN.

been announced by the General Printing Ink Division of Sun Chemical Corp. Called Hydry Non-Skid Ink, it is available in any range of colors. It is rub-resistant, yet provides a built-in "skid-resistance" for industrial packages. Advantages which are said to result from its use include less time for stacking, reduced danger of shifting in transit, in storage and during in-plant handling.

Circle 195 on Reader Service Card for more information

Double Capacity Box

At first glance, this container appears to hold 18 glass hydrometer jars. Closer study reveals that die-cut packing-pieces at the top and bottom of the box conceal the bases of 18 additional jars, giving a total of 36 jars in a size box which formerly carried only 18. Designed by Hinde & Dauch for the Doerr Glass Co., the box is also reported to result in lower initial packing costs (less packing time is required) and to have provided appreciable savings in freight charges.



Circle 196 on Reader Service Card for more information

How Lyon Metal Products cut 7.7% off packaging cost with TAPE-STRAP®

Here's a typical example of saving money with Tape-Strap—laminated, reinforced filament tape.

Among the Lyon Metal Products Company's products is a 6-unit metal shelf, weighing 143 lbs. It's packed in a full telescope carton. Previous reinforcement was six 86" strips of rigid material, mechanically applied.

Two years ago, Lyon switched to Tape-Strap. Now, three 1" x 8" strips of Tape-Strap on each side provide all the reinforcement needed.

Packaging with Tape-Strap is easier, less dangerous to personnel, requires no special equipment, and saves 7.7% per unit over the previous packaging method.

You can't break Tape-Strap

This amazingly strong reinforcing tape has a central layer of thousands of tiny filaments embedded in resilient, shock absorbing material. This center is sandwiched between outer layers of tough, pliable Kraft. Adhesion is instant and permanent. Tape-Strap carries a super heavy coat of the finest, water-soluble gumming.

TAPE-STRAP is approved too! It is approved under Rule No. 41 and No. 5 of the Consolidated and Uniform Freight Classifications and various specific packaging items. It has also been accepted by Railway Express under Rule No. 18. The United States Government approved TAPE-STRAP for domestic packaging by announcing a new Military Specification MIL-T-4601 (USAF). This specification is dated February 2, 1953 and our Tape-Strap meets all requirements of this specification.



Photo shows neat Tape-Strapped carton at left, with previous packaging method illustrated at right.



FREE SAMPLE ROLL—Write for it . . . and test Tape-Strap's astonishing reinforcing strength, ease of application, in your own shipping room.

LEADERS IN THEIR LINE

Patented

MID-STATES Gummed Paper Company

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New York • Boston • Philadelphia • Cleveland • Detroit • St. Louis • Atlanta • Los Angeles

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Adjustable Box Stitcher

Acme Steel Co. has announced the development of a box stitcher which is rugged enough to handle heavy-duty work, but which can be adjusted for efficient use on light stitching jobs.



It is the N-5 Acme-Morrison and is available in five different types; post, arm, combination post and arm, side seam, top. This complete line provides for stitching all types of corrugated and solid fibre boxes, quickly and securely. By means of a small hand lever, the device can be

immediately adjusted to handle work thicknesses from 1/16-inch to 3/4-inch. This versatility makes it possible to use the machine in special tacking and carding operations also. Acme's arcuate wire stitching method is used in the stitcher. With that method, the arc formed into the wire gives higher column strength, permitting savings in material cost because stitches can then be made from lighter gauge wire.

Circle 197 on Reader Service Card for more information

Lower Shipping Costs PLUS Higher Packing Production



with **cush-on-strap**

Cush-On-Strap is strong as a giant but gentle as a lamb... ideal for protective packing of all types of appliances and other finished metal and wood products.

8 reasons why Sackner's CUSH-ON-STRAP will help you

- 1 ONE PACKAGE**—high grade steel banding for strength; and protective, soft, fluffy cellulose padding. — all in one unit.
- 2 CUTS LABOR COSTS**—one man does the work of two. Standard tools used.
- 3 STEPS UP PACKING PRODUCTION**—lowers your packing costs.
- 4 READY TO USE** the minute it arrives—no delay in measuring and cutting; lengths pre-determined; no waste; metal pre-scored for ease in breaking in lengths required for your product; 6-inch spacings permit quick application with the clinching tool; stripped for 6 inches at both ends of the length; comes to you on a convenient fibre throw-away reel.
- 5 ELIMINATES FUSSY PRE-ASSEMBLY.**
- 6 NO SHIPPING DAMAGE** —eliminates broken catches, hinges, drawer tracks, etc., — preventing costly replacements.
- 7 WILL NOT STAIN OR MAR THE FINEST FINISHES.**
- 8 WIDE RANGE OF USES** —for packing automotive finished parts, dish washers, household furniture, ironers, machinery, metal kitchen units, office equipment, ranges, refrigerators, scales, washing machines, x-ray equipment, etc.

CUSH-ON-STRAP is one result of 37 years experience in converting cellulose paper, jute, cotton and other raw materials into braided, twisted, shaped, laminated and woven products for the furniture, automotive, electrical, packaging and other industries.

USE THE COUPON to learn how we can serve you in the packing and shipping of your products.

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Grand Rapids, Michigan

How can CUSH-ON-STRAP lower our shipping and packing costs?

- ☐ Our products are.....
- ☐ Please have your Packaging Engineer demonstrate the advantages of CUSH-ON-STRAP.

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By..... Title.....

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GRAND RAPIDS 2, MICHIGAN

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It takes only a **Jiffy**
to pack it right...
to ship it fast...

Whether you ship spare parts, tools, accessories, precision instruments or other products of semi-fragile or non-fragile nature—you need only **JIFFY PADDED SHIPPING BAGS** for complete packing protection.

Consider the savings effected in using **JIFFY PADDED SHIPPING BAGS**.

Time and Labor—the entire packing operation is reduced to 3 simple steps.

Insert item—Fold along scored line—Staple or Tape.
SAVE UP TO 76% IN PACKING TIME!

Packing Material Costs—stock **JIFFY BAGS** and eliminate the need for corrugated boxes, fillers, overwraps and twine. **JIFFY's** built-in expansion cushioning hugs contents tight, absorbs shocks in transit. Its patented construction prevents damage due to moisture, dirt or dust.

Available in 8 standard sizes.

Free samples on request.

Distributors in 43 principal cities.

Jiffy Bags meet Military Specification MIL-B-4604 (USAF).

JIFFY MANUFACTURING COMPANY

Circle No. 175 on Reader Service Card for more information
FLOW • JUNE, 1954

Circle No. 102 on Reader Service Card for more information



LABEL ADDRESSING MADE FASTER..CHEAPER..MORE ACCURATE

Multistamp Duplicator makes multiple addressing quick, clean, easy... 1000 or more clear, sharp copies without re-inking. Prints practically anywhere... postcards, tags, labels, boxes, cartons, packages, menus, forms, letters... paper, cloth, wood. Just type, write, trace or draw on inexpensive stencil... snap it on duplicator... and print—like using a rubberstamp. New pre-die-cut "FORM-CUT" stencil prints shipping form and identification data in one operation.

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MULTISTAMP
STENCIL DUPLICATOR

Portable... non-mechanical... of non-corrosive metal... replaceable ink pads. 8 complete outfits: \$9.50 to \$99.50, including supplies (f.o.b. factory). Write for literature or see your office or shipping room supply dealer.



Low-cost case marker pays for itself in weeks...saves thousands of \$ every year



ROLACODER Imprinter attaches to conveyor or case-sealer

Now you can do away with that costly extra operation for manual rubber-stamping or stencilling of code-dates, lot numbers, contents descriptions, etc. on cases... or reduce big inventories of completely printed cases... and save thousands of dollars annually. Use an inexpensive ROLACODER machine to mark your cases automatically on the production line. Compact, precision-made ROLACODER is friction-operated, self-inking—makes single, accurately located imprint on each case to register with other copy. Uses quick-change rubber type or dies, holds 8-hour ink supply. Different models available to imprint top, ends, sides of small or large boxes, cartons, cases, other packages.

Write for descriptive literature

Gottsch

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Hillsdale 5, N. J.

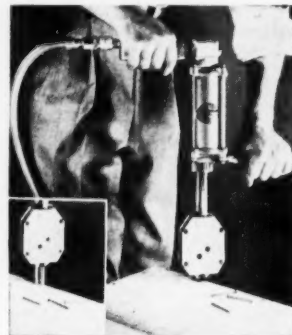
50
Years of
Leadership

In Canada: RICHARDSON AGENCIES LTD., Toronto & Montreal
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142

Cost-Cutting Nail Puller

This automatic nail-puller, made by Oton Mfg. Co., is said to provide savings in the following ways: "(1) it is four times faster than old hand-methods; (2) its accuracy and firm grip and pull save nails, eliminate splintering of wood and damage to merchandise; (3) it operates efficiently in any routine procedure as well as inspection-repack operations." The puller operates from regular plant air lines (75 to 100 psi). Gripper prongs squeeze past heads of nails to grip the shanks. Thus, it does not tear off nail-heads. Unit weighs 10 lb. and is available in three models: Model 14 for 6 to 14-penny nails; Model 20 for 10 to 20-penny nails and Model 20HD for 10 to 30-penny nails.



Circle 198 on Reader Service Card for more information

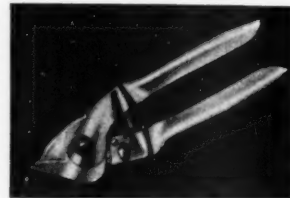
Reinforced Tape

General Gummed Products, Inc. has announced the availability of "Glaret" De Luxe, a tape reinforced with uniformly spaced extra strong glass fibres and laminated with a non-asphaltic water and heat resistant adhesive. The absence of asphalt is said to make a thinner and more pliable tape, eliminate bleeding, clogging up of tape dispenser knives and softening of laminant in hot weather. It is designed for use on all types of heavy packages as well as on many other taping applications where the extra strength of the tape saves both tape and labor.

Circle 199 on Reader Service Card for more information

Lightweight, Powerful Strap-Cutter

A lightweight strap-cutter for small or medium size flat or round steel strapping is claimed to feature unusual power. It cuts flat strapping up to 3/4" x .035" and round steel strapping up to 14 gauge (.080), freight load straps and similar material up to Brinell 300



Rockwell C31 hardness. Special molded plastic comfort grips are designed to prevent hand-slippage when the blade is pushed under tight wire strapping. A thumb button is used to lock the tool closed. In action, a between-handle spring opens the jaws quickly after each cut. Manufacturer is H. K. Porter, Inc.

Circle 200 on Reader Service Card for more information

FLOW • JUNE, 1954

DESIGNED FOR EVERY "MOVE" YOU MAKE...

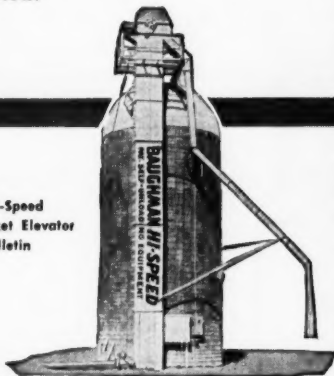
BAUGHMAN CONVEYORS

Cut the high cost of lifting! Baughman Conveyors are designed in "Standardized" units . . . prefabricated sections enable you to assemble units best suited to *your* particular job assignment.

This means the most economical plant operation at a much lower initial investment.

The simplified Baughman assembly principle makes it easy for your own men to assemble, lengthen, shorten or move—without the usual high erection costs.

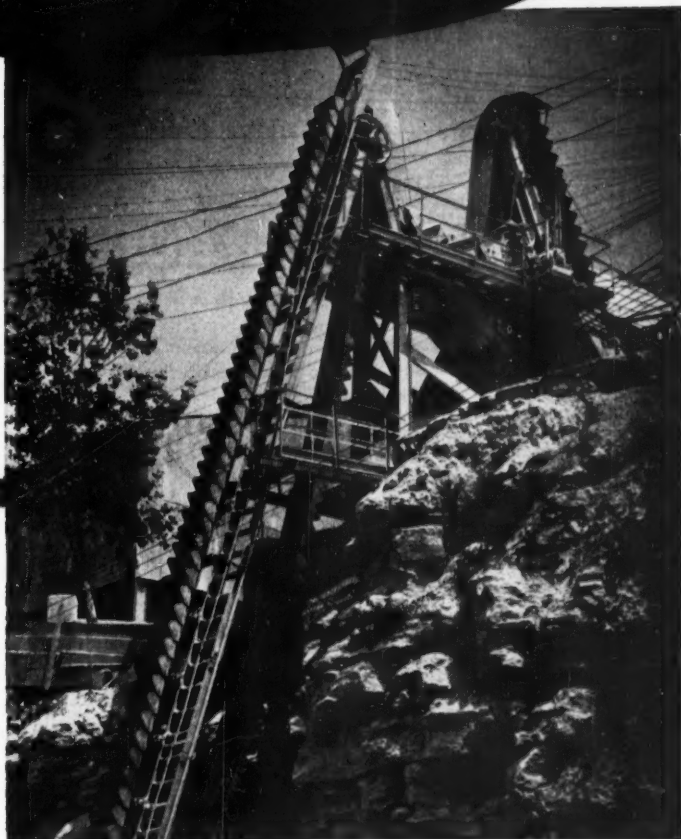
Model 175 Hi-Speed Belt and Bucket Elevator (Write for Bulletin No. A-299)



Model 230 Portable Troughed Belt Conveyor (Ask for Bulletin No. A-296)



Model 225 Conveyor Combination (Request Bulletin No. A-342)



Model 220 Continuous Bucket-on-Belt Elevator (Details in Bulletin No. A-389)

QUALITY YOU CAN DEPEND ON!

It costs less to *buy*, less to *ship*, less to *operate* a Baughman Hi-Speed Conveyor—because there's a basic difference in Baughman engineering . . . prefabricated stock units mean lower initial cost, savings in shipment and erection.

**Your first Baughman will convince you—
YOU CAN'T BEAT A BAUGHMAN!**

Sales and Service from Coast to Coast



BAUGHMAN MANUFACTURING COMPANY

106 Arch Street

Jerseyville, Ill.

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FLOOR TRUCKS

FOR MATERIALS HANDLING
STANDARD AND SPECIAL



WHEELS: Metal - Rubber - Pneumatic

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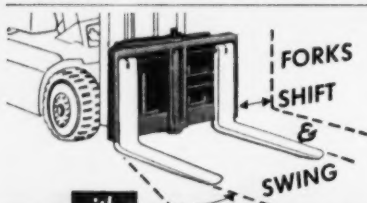


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"Established 1879"

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SWING-SHIFT UNIT
HYDRAULIC FORK CONTROL ATTACHMENT
ADDED TO YOUR LIFT TRUCK

Ask us
how **SWING-SHIFT**:

- Turns load ahead of truck around corners.
- Reduces aisle width 19% to increase your storage capacity.
- **SWINGS** and **SHIFTS** loads quickly into exact alignment without moving truck.
- Speeds box car loading by reducing truck maneuvering.

UNITS AVAILABLE FROM 3,000
TO 16,000 LB. CAPACITY

See Your Lift Truck Dealer or Write

SWING-SHIFT MFG. CO.

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LONGVIEW, WASHINGTON

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This completely new, up-to-the minute directory is the only permanent complete volume of authoritative information about material handling, packaging and shipping equipment and accessories. Its definitions are used as standard by all engineering societies, by virtually all associations, and by military and industrial groups.

The Directory's 772 pages are arranged in six convenient, thumb-indexed sections for quick, easy reference:

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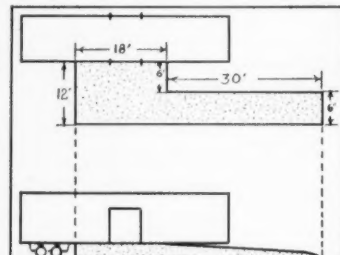
Continued

loaded as at present, they must be unloaded manually and there is not much chance in reducing this cost.

If the cartons were loaded in the cars and trailers as outlined on the previous pages, and some of the present lift trucks were fitted with the clamping device, it is believed that this yearly cost could be reduced substantially.

Dock Facilities

To begin with, the problem of not having dock facilities for unloading purposes would have to be solved. This could be accomplished in one of two ways: (1) either a permanent dock could be erected to unload the cars and trailers; (2) a portable type ramp could be



purchased. A permanent dock would not offer the flexibility of a portable one when it had to be used for both box-cars and trailers. Also a permanent dock would probably interfere with any future plans for building expansion since by necessity it would have to be erected in the yard near the present warehouses. Thus, a portable ramp might be best.

At times there may be more than one box-car in the yard at one time. At such times it would be especially advantageous to have a portable type dock since the cars would not have to be spotted in any one place. If it became necessary to unload a trailer at the same time that a box-car were being unloaded, this could be done by backing it up to the 12' side. It is estimated that a dock such as this would probably cost about \$5,000.

The second step in instituting the new system would be to equip lift trucks with clamping devices. At the present time, four lift trucks are used in unloading empty bottles, placing them in stock, and delivering them from stock to the filling lines. It is suggested that two 3,000-pound and two 4,000-pound lift trucks be equipped with the clamping device. These are gas operated trucks which have their capacities rated at a 15-inch load center. The addition of a clamping device, will lower the capacity by about 500 pounds. Therefore, with the device, and a load with a 24-inch center, the 3000 pound truck will have a capacity of 1750 pounds and the 4000 pound truck will have a capacity of 2500 pounds.

At present, the great majority of loads being handled by the trucks are below 2000 pounds. The clamping attachment will cost \$1500 to \$2000 for each truck.

It is estimated that with the new system, a box-car could be unloaded in an average time of 10 man hrs. and 6 lift truck hrs. A trailer would take about 4 man hrs. and 2 lift truck hrs. These averages are based on the commodities handled in 1953, their quantities, and the average time it took to unload these cars and trailers. It would, therefore, cost about \$15.00 for a box-car and \$6.00 for a trailer, in labor.

Further Savings

Since pallets would not have to be used with the new system, a further saving would be realized. It is difficult to estimate this saving, but I would think that it would be about \$3500 per year. An additional maintenance cost is incurred because of the clamping attachments. For four trucks, this would be about \$800 per year. The box-cars and trailers could not be loaded as fully as they were in the past, because some space must be left for the clamping arms to enter. For this reason, up to 10% more cars and trailers will probably be necessary to realize the same amount of material delivered as was handled in 1953.

The new equipment cost for this method would be \$5,000 for the dock and \$8000 for the clamping devices. These costs would proba-

You Can Judge a Machine by the Calibre of its Users!

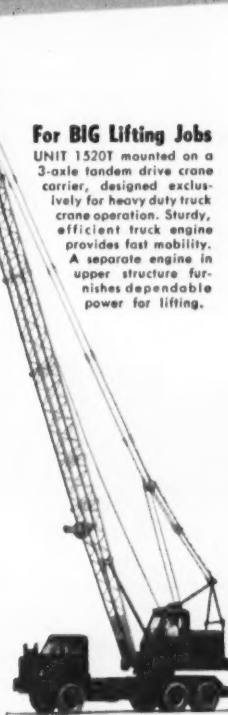
In every section of the country...in every branch of industry...you will find satisfied owners and operators of UNIT equipment. Surely, such widespread popularity must be deserved. Why not investigate? Write for novel "TV" brochure that depicts the complete Unit line.

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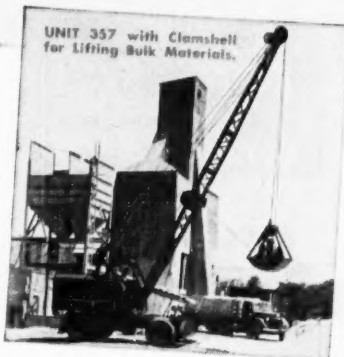
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Campbell Soup Company
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Chicago, Milw., St. Paul & Pac. R.R.
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UNIT 357 Self-propelled Mobile Crane with Magnet Lifting Scrap Iron.



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C-F Lifters give you the fastest, cheapest and safest way to handle loose or bundled sheet steel or plate. 1 man operation saves labor; infinite adjustments of Lifter jaws permit it to handle many widths of steel . . . wide carrying angles hold packs securely, won't damage even highest grade sheets. C-F Lifters are made in standard and semi-special models with capacities from 2 to 60 tons.



Write for Bulletin SL-28. It describes and illustrates C-F Lifters money and time saving advantages.



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**SAVE TIME...
LABOR...
MATERIAL...**

SLASH COSTS

Continued

bly be amortized over a 5 year period resulting in a yearly cost of \$2,600. As pointed out before, some of the unit loads would probably require a fiberboard insert between the bottom layer and the upper ones. Also some additional dunnage might be required to secure the loads. These items will be added costs and could run as high as perhaps \$3,000 per year.

Taking all these items into consideration, the following table is a summary of costs showing the relation between the old and the proposed method. This table is based on the operations as they were in 1953.

Present Method	
Labor for unloading	\$17,415
Lift truck hours	3,870
Pallet costs	\$ 3,500
Additional dunnage	
Additional maintenance	
Capital investment	
Total	\$20,915 3,870

New Method	
Labor for unloading	\$ 8,470**
Lift truck hours	2962
Pallet costs	
Additional dunnage	\$ 3,000
Additional maintenance	\$ 800
Capital investment	\$ 2,600
Total	\$14,870 2962

**This cost of unloading the cars and trailers was arrived at after 10% more carriers were considered than the number handled in 1953 because of the fact that under the new method, they could not be loaded as compactly.

Greater Savings

From the above table it can be seen that with all things considered, a savings of \$6,045 and 908 lift truck hours would be realized per year. After the capital investment is paid off, the savings per year would be even greater.

Before this system could be put into effect, the buyer and vendor would have to agree on the patterns of the loads and the method of loading the carriers. In the optimum case, both buyer and vendor should use the same equipment for handling the cartons. In this way the vendor would also realize savings. Industries such as bottling, canning, manufacturers of corrugated paper products, and those dealing in paper cups, or tissues, where either the raw materials or the finished goods are relatively of light weight, could adapt this system to their operations.

NEW LONDON TROUGH BELT CONVEYOR

for REDI-MIX,
SAND, GRAVEL,
DIRT, SALT,
CHEMICALS



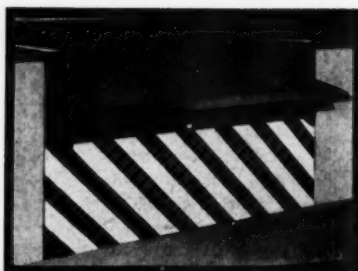
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- LIGHT • PORTABLE
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Handles your BULK MATERIALS. Gas or electric drive — 12" Belt, standard lengths 18', 24', 30'. Low maintenance. OTHER CONVEYORS for boxes, bags, bricks, blocks, bundles, beer, coal, metal parts, chemicals.

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Christensen
**HYDRAULIC
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Feature

**4 WAY MOVEMENT
UP, DOWN, IN & OUT**

TWO MODELS

6' x 6' & 6' x 8'

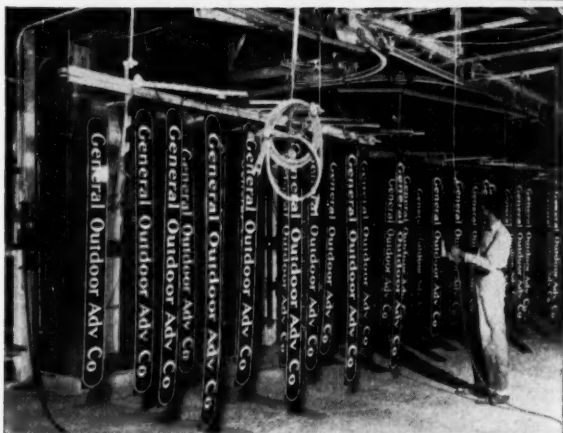
Up to 20,000 Lb. Capacity

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WM. CHRISTENSEN Co., Inc.
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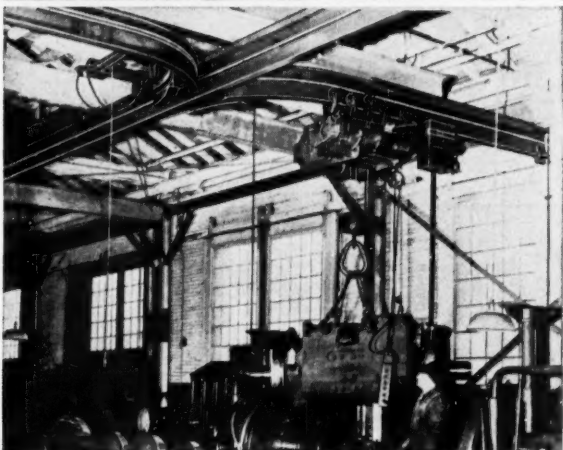
Circle No. 34 on Reader Service Card

what MONORAIL can do . . .



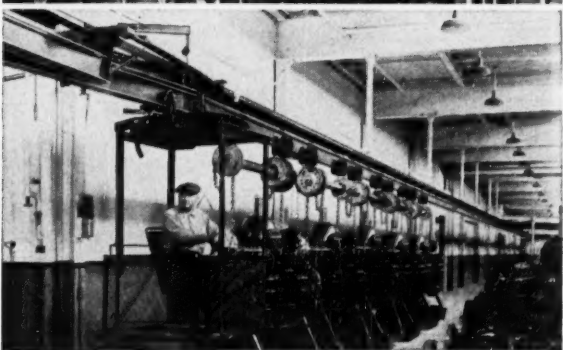
WHERE SPACE IS LIMITED

MonoRail relieves operating congestion by transferring materials handling to unused overhead area. Equipment can often be installed with no loss of production.



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Any size or shape of load, within the capacity of a MonoRail system, can be moved by using slings, grabs or other quickly changed "below the hook" devices for hand or electric operation.



FOR LOW MAINTENANCE COSTS

American MonoRail equipment is specially engineered and carefully built for long-life, rugged service. Manual or automatic operation continues with little or no downtime for maintenance or repair.

Send for Bulletin C-1 illustrating hundreds of successful MonoRail installations.



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Unusual in Many Respects



with...

10 TON
MAGNET
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5 TON
SCRAP
GRAPPLE
HOIST

THIS 5 motor Euclid Electric Crane is probably the most advanced yet built for handling scrap metals.

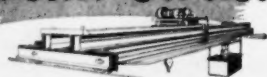
Its trolley is 22 feet long and equipped with 10 ton magnet hoist and 5 ton double drum grapple hoist arranged so that magnet or grapple can be operated alternately or simultaneously.

The bridge is 85 feet wide. Full magnetic control is incorporated.

Present day progress cannot produce a more efficient, more serviceable crane.

We'll be glad to send details regarding this unusual crane or consult with you about one designed to meet your particular needs.

Euclid Cranes



The EUCLID CRANE & HOIST Co.

1362 CHARDON ROAD
EUCLID, OHIO

TIME SAVINGS . . .

(Continued from page 133)

part handling which would be necessary if pieces had to be moved from production line to packaging. It is operated by a 115 volt, 60-cycle single phase 1/3 hp motor, the speed of which can be varied up to a maximum of 1750 revolutions per minute. Packages are turned out at an average of 53 per minute.

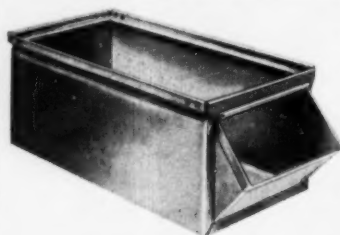
The largest piece which has been packaged at North American to date was a 3 x 3 x 1/2 inch clamp which was sealed, one to a bag, in a 7 x 7 inch bag. Smallest part to be packaged was an "O" ring, 1/4-inch in diameter, five to a bag.

Thanks to Packmasters, manufacturers of the equipment described in the preceding article, for assistance in accumulating information used.

*The Reader Service Card
Is Bound In This Issue
For Your Convenience*

IMMEDIATE SHIPMENT

STYLE 900D STACKING BOX



- Reinforced Corners
- Drop Handle Back of Bin
- Spotwelded Construction
- Four Rivets for Extra Strength
- Continuous Stacking Rim all Four Sides
- Stacks with style 800D Stacking Box of same length and width.

All Prices F. O. B. Factory or Warehouse Phila.
Complete Shop Box and Shop Equipment Catalog and Price List on Request.

Many Other Products Available

Product Number	Width	Length	Height	Gauge	Steel	Price Plain	Price Green
901D-18	10"	18"	6"	18		2.56	2.78
902D-18	12"	18"	8"	18		3.10	3.40
903D-18	12"	18"	6"	18		2.78	3.06
904D-18	10"	20"	8"	18		2.94	3.24
905D-18	10"	18"	6"	18		2.67	2.92
902D-16	12"	18"	8"	16		3.43	3.73
904D-16	10"	20"	8"	16		3.25	3.55

PHONE • WIRE • WRITE
Baldwin 9-1805

BAY PRODUCTS INC.

1561 W. INDIANA ST., PHILADELPHIA 32, PA.

Circle No. 165 on Reader Service Card for more information

MAN SAVER



Sweeps up to 400% faster than costly pushbroom cleaning . . . saves money . . . saves manpower

A Parker Floor Sweeper saved \$2100 a year for a food manufacturer—\$520 a year for a lumber yard—75% of all sweeping costs for a building material manufacturer. *You, too, can save.*

Sweeps all type floors. Collects and sweeps in one operation.

Easy to empty. A money-saver for any plant from small garage to large factory or warehouse.

Now available—information file containing time studies, case histories, and full details. *Write, wire, or telephone today.*

FACT FILE AVAILABLE

PARKER INDUSTRIAL FLOOR SWEEPER

PARKER SWEEPER CO., 66 Bechtel Ave., Springfield, Ohio

Circle No. 154 On Reader Service Card for more information

FLOW • JUNE, 1954

COAL COMPANY REPORTS:



UTIL WHEELER UNIT DOES WORK OF \$40,000 CRANE



LOADS ITS OWN WEIGHT EVERY FOUR BUCKETFULS

"Our MM Wheeler does the work of a \$40,000.00 crane in our yard," says Clifford H. McCurdy of the McCurdy Coal and Supply Company, Detroit, Mich. With exclusive Shuttle Gear for 6 forward speeds and instant reverse in each and the extra efficiency of the MM hydraulic pump, the UTIL takes less time for each load-and-dump cycle . . . actually delivers 3 loads for 2.

MM power crowding action digs in and up . . . delivers up to 2½-ton bucketful at every pass. Heaviest industrial-type engines, clutches and transmissions are standard equipment on UTIL Wheelers. Heavy-duty power steering is also available for more rapid control in loose or rough ground.

For any loading job, call in your Minneapolis-Moline dealer-distributor. Let him demonstrate how you can save money by replacing expensive, less maneuverable equipment with greater-capacity, lower-cost, time-saving MM Wheeler units.



MINNEAPOLIS-MOLINE
MINNEAPOLIS 1, MINNESOTA



UTIL Wheeler-Loader unit has extremely long forward reach, dumping height, and greater rate of bucket lift. Shuttle gearing spots load in half the time. Cabs are available for driver comfort, permit continuous operation in any weather.

Circle No. 100 on Reader Service Card for more information



in useful **FREE literature**

These publications, written by experts, are FREE. Indicate your choice on the self-mailing Readers Service Card.

Emergency Cards:

The Market Forge Company has printed for national distribution an "Emergency Call Card". The card is printed in bright red and may be placed near the telephone or on the bulletin board. This listing of emergency telephone numbers is a part of the company's plan to contribute to the national safety campaign.

Circle 217 on Reader Service Card

Bagging Table:

A profusely illustrated 4-page brochure showing the complete line of FMC bagging tables has been prepared by the Packing Equipment Division of Food Machinery and Chemical Corp.

Circle 218 on Reader Service Card

Hot Belts:

Hot material conveyor belts made with rayon fabric reinforcement are featured in a new catalog section just issued by The B. F. Goodrich Company. In addition to detailing recommended services for various types of belting, the catalog describes the company's patented nylon breaker.

Circle 219 on Reader Service Card

Floor Protection:

A fully-illustrated 16-page catalog, published by Flash-Stone Company, Inc. describes rolled steel flooring plates and their uses. The design characteristics which prevent buckling, curling or cracking, and eliminate slipping and noise are fully described and illustrated.

Circle 220 on Reader Service Card

Speed Controller:

Information about the Yale Cam-O-Tactor time delay speed controller is contained in Bulletin 1599A published by the Yale & Towne Manufacturing Co. This controller was designed specifically for all electric industrial trucks.

Circle 221 on Reader Service Card

Storage & Profits Increased:

A new 24-page, full-color catalog on Gerlinger fork lift trucks is just off the press. In addition to detailed specifications, the comprehensive catalog is fully illustrated. Two pages are devoted to attachments; another section points out how the trucks can increase storage and profits without adding to present plant size.

Circle 222 on Reader Service Card

Tractors:

"Power Equipment for Your Profit Zone" is the title of a 16-page catalog on industrial equipment offered by the Tractor and Implement Division, Ford Motor Company. The book illustrates many of the jobs which can be handled efficiently and economically by the Ford tractor.

Circle 223 on Reader Service Card

Effortless Assembly:

A system for standardizing the non-standard job is described by Flowstrut Corporation in a colorful brochure just released. Economical planning, effortless assembly and rapid construction are featured in the literature.

Circle 224 on Reader Service Card

Pocket Guide:

A 20-page pocket guide book entitled "In-Between Handling—The Economical System for Handling Materials" has just been published by Big Joe manufacturing Company. The book covers the short distance hydraulic manipulation of materials too heavy for manual handling yet not requiring motor driven equipment.

Circle 225 on Reader Service Card

Bearing Protection:

The Farval Corporation has prepared a colorful brochure covering steel expansion in the Western United States since 1945. The literature points out how centralized lubrication protects steel mill bearings. Said to be of interest to all sections of the country.

Circle 226 on Reader Service Card

Lift Trucks & Skids:

Bulletin #LT453 by West Bend Equipment Corp. tells what you should know about lift trucks and skids. The colorful bulletin lists the various trucks and skids manufactured by the company, and gives equipment specifications.

Circle 227 on Reader Service Card

Case History Reports:

Towmotor Corporation has prepared for distribution case history reports on companies which have accomplished great savings through the use of its equipment. A brewery, cement block firm, auto manufacturer and department store are just a few of the accounts which the reports cover.

Circle 228 on Reader Service Card

NEW YALE WORKSAVER IS BETTER THAN EVER

Look at the features
now added to this popular
High-Lift Truck

Lift increased 10 inches with no increase in overall height.

Redesigned counterweight provides greater safety for operator's feet.

New nylon-covered contactors in commutator are safer, longer lasting, more efficient.

New mechanical time delay in 2nd speed gives smoother acceleration and operation.

New type drive tire reduces change-over time 60%...provides greater stability and longer truck life.

- Listed above are only the latest of many new features that make any YALE Worksaver your best small truck buy. Yes, these low-cost Trucks move up to 7500 lbs. safely, surely, and efficiently...over low-load flooring and areas where big trucks can't fit. Yet, YALE Worksavers offer big truck advantages: two forward and reverse speeds, power hydraulic lift and tilt, special attachments for special handling jobs.

- Now you can acquire a YALE Worksaver—or any YALE Truck—without major investment under a flexible "3-Way-Finance-Plan" tailored to your precise needs. Mail coupon for details.

Shown here is a YALE Worksaver
stacking heavy containers. ▶

YALE *
INDUSTRIAL LIFT TRUCKS
AND HOISTS

*Reg. U. S. Pat. Off.

NEW ECONOMY

NEW EFFICIENCY

NEW SAFETY

MAIL THIS COUPON TODAY

The **YALE & TOWNE** Manufacturing Co., Dept. 46
11000 Roosevelt Blvd., Phila. 15, Penna.
Please have your local representative call for an appointment.

Company _____
Name _____ Title _____
Street _____ City _____ State _____
In Canada write: The Yale & Towne Manufacturing Company
St. Catharines, Ontario, Canada

Gas, Electric, Diesel & LP-Gas Industrial Trucks • Worksavers • Hand Trucks • Hand & Electric Hoists • Pul-Lifts
Circle No. 142 on Reader Service Card for more information

FLOW • JUNE, 1954

151

Circle No. 45 On Reader Service Card for more information

1ST AND STILL KING

BARREL AND DRUM TRUCK

THE DICO

"Float-away"

... yes, the original "Float-away" is still your best buy for barrels and drums!

Quick and easy loading—axle and wheels never leave the floor in loading process. Stands by itself when not in use—an important safety factor. Handles "bilged" or straight-sided barrels equally efficiently. Equipped with DICO "HD" indestructible steel "Molded-on" rubber tired, roller bearing wheels.



SEE
YOUR
JOBBER
OR
WRITE
FOR
CATALOG

"ALL-STEEL" TRUCKS
for LONGER WEAR
and
MAXIMUM STRENGTH

DICO

DES MOINES 5, IOWA

"Profitable Minutes":

The Hyster Company has published a new illustrated booklet entitled, "9 Profitable Minutes for Contractors". The publication contains many cost and time saving ideas taken from actual case studies. On-the-scene action photos show tractors and attachments working in a wide variety of construction operations.

Circle 229 on Reader Service Card

Fifty Foot "Package":

Catalog A-96 from Richards-Wilcox covers the company's recently developed line No. 460 on continuous power conveyor for lightweight material handling. A "package" unit contains everything necessary for a 50 foot system. The catalog is well illustrated with diagrams and "in-use" photos.

Circle 230 on Reader Service Card

Crane Highlights:

Cranes in the "524" series are featured in a new 2-color, 20-page descriptive catalog just released by The Thew Shovel Company. Detailed design and construction views, along with on-the-job photos, highlight the booklet.

Circle 231 on Reader Service Card

Conveyor Applications:

The Rapids-Standard Co., Inc. has published catalog GC-53. Entitled, "material flow is the bloodstream of business" the detailed catalog pictures and describes all types of conveying equipment manufactured by the concern. Application ideas are featured throughout.

Circle 232 on Reader Service Card

Trailers & Couplers:

Mercury Manufacturing Company has issued bulletin A-100 on trailers, their advantages and varying characteristics. Bulletin M-130 covers couplers and their adaptability to trailers. Both are two-color, four-page spreads, profusely illustrated throughout.

Circle 233 on Reader Service Card



REVOLVATOR GO-GETTER

Lift Efficiency

Door-to-Door Warehouse Handling Efficiency

For the efficient flow of goods within and without a plant—from production to storage—to shipping—there is no lift truck on the market today that surpasses the Revolvator Go-Getter line.

Illustrated above is the high lift model Go-Getter—a favorite of the food producers—accepted throughout all industry. In 2000-3000 lb. capacities—remarkably adept in narrow aisle work, the Revolvator Go-Getter high lift truck permits great economies in warehousing.

Write for the full facts today.

REVOLVATOR CO.
8739 Tonnele Ave., North Bergen, N. J.

Check your Tackle Blocks for best service. Worn sheave grooves, bearings and pins are expensive.

LOWER HANDLING COSTS

• Blocks correctly designed and engineered for your specific operation saves money.

Our engineering services are available for your specialized needs.

Over a quarter century of service.

Send for our complete catalog today.

MADESCO TACKLE BLOCK CO.
EASTON, PA.

MADESCO
BLOCKS

HAE-M592-2-54



Circle No. 116 on Reader Service Card

Circle No. 86 on Reader Service Card

Tow-Line Operations:

Nutting Truck and Caster Company have released a new 2-color, 8 page bulletin featuring tow-line systems for cost saving, "production line" materials handling in warehouses and freight terminals. Bulletin number is 54-TL.

Circle 234 on Reader Service Card

Ramps & Docks:

Two colorful brochures are available from Rowe Methods Inc. The illustrated literature contains complete details and specifications on adjustable docks and ramps of the company's manufacture.

Circle 235 on Reader Service Card

Strapping:

The Stanley Steel Strapping Division of The Stanley Works, announces the availability of its 1954 catalog. The catalog deals with the economy and efficiency which can be achieved in packing and shipping products.

Circle 236 on Reader Service Card

Multi-Use Front End Loader

Baker-Lull Corp. has released a brochure containing a complete description of its new Model 20, 12 cubic foot front-end loader. In addition to in-use photos, the literature contains performance data, details of the power plant and other mechanical features and complete specifications.

Circle 237 on Reader Service Card

Precision Instruments:

W. C. Dillon & Co., Inc., manufacturers of precision laboratory instruments, have available a new brochure which describes its products and their use. Various equipment features are colorfully depicted.

Circle 238 on Reader Service Card

Metal Chip Handling:

How to handle metal chips and abrasives at big savings is described in brochure F-H354 avail-

able from Hapman Conveyors, Inc. The brochure tells how the entire cost of new equipment and installation was written off by one manufacturer in the first nine months of operation.

Circle 239 on Reader Service Card

Loading & Unloading:

Instructions on how to load and unload DF Loader-equipped box cars are available to shippers and railroads in a new booklet prepared by the Evans Products Com-

pany. The booklet explains how to make best use of the three component parts of the car's equipment: doorway members, bulkheads and crossmembers.

Circle 240 on Reader Service Card

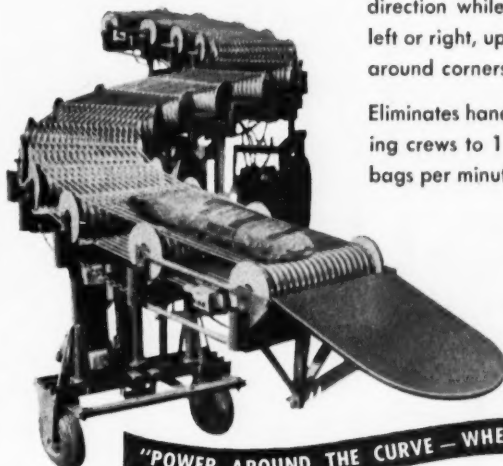
Motion Picture:

Movies may be obtained on a free loan basis from the United States Steel Corp. Bulletin MP125-154 lists the pictures available and the subjects covered.

Circle 241 on Reader Service Card

SAVE MONEY ON YOUR LOADING DOCK!

POWER-CURVE LOADER CUTS COSTS

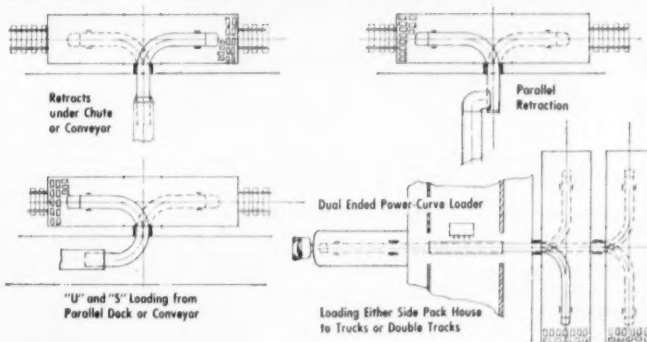


This Power-Curve Loader curves in any direction while under power. Swing it left or right, up or down. Conveys bags around corners, into boxcars or trucks.

Eliminates hand trucking; reduces loading crews to 1 or 2 men, for 12 to 30 bags per minute.

- Self-propelled
- Self-retracting
- Reversible

MADE ANY LENGTH OR HEIGHT: FITS ANY LOADING SITUATION



WRITE FOR BULLETIN NO. 50

We offer no-obligation engineering service for your specific bag handling problem... Car Loaders, Conveyors, Bag Flatteners, Elevators.

POWER-CURVE CONVEYOR CO.

2185 SOUTH JASON STREET

DENVER 19, COLORADO

Circle No. 113 on Reader Service Card for more information

Circle No. 148 on Reader Service Card



TO SPEED YOUR LINES USE FERGUSON CONVEYORS

Move your parts, packages and finished products on Ferguson Conveyors and you'll speed up your assembly, packaging and shipping lines. How? Ferguson Conveyors shorten paths of travel . . . eliminate unnecessary handling . . . move materials more directly. You'll find, too, that the savings you obtain more than justify the cost of installation.

Ferguson Conveyors are custom engineered to fit the need and solve the problem. Whether belt, roller, power or gravity wheel conveyors, they'll do your job more efficiently and economically.

Write, wire or call us today with your handling problem.

**HARRY J.
ferguson
COMPANY**
121 West Ave., Jenkintown, Pa.
Organic 4401

Electric Trucks:

Bulletins 209, 703 and 800 from The Raymond Corporation colorfully describe the company's line of rider electric trucks. Complete specifications and detailed drawings are shown throughout the brochures.

Circle 242 on Reader Service Card

Loading Machine:

N. P. Nelson Iron Works, Inc. has available a colorful brochure on the "Loadall" machine. No belt changes or special attachments are said to be needed for the unit. Actual on-the-scene photos and equipment specifications are shown.

Circle 243 on Reader Service Card

Easy Handling:

Three bulletins from The Belt Corporation point up the company's lightweight portable belt conveyor. Form 52122 tells about the Model S "Handy-Handler"; form 52124 features the Model R

Circle No. 9 on Reader Service Card

RAZORBACK PALLET

**Are engineered to meet
individual requirements!**

RAZORBACK PALLETS are available in heavy or light weight and in nailed or bolted design.

ORDER a trial car today and prove to yourself that RAZORBACK PALLETS are superior, and last longer with lower maintenance cost.

Arkansas Pallet Co.

P. O. Box 794-A Phone 6474

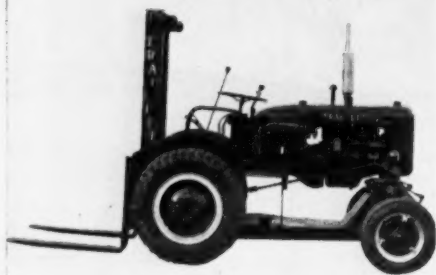
PINE BLUFF, ARKANSAS



TRAC-LIFT

THE GENERAL ALL-PURPOSE FORK LIFT TRUCK

for
Heavy
Duty
Work
at
LOW
COST



Service & Parts on Tractor Chassis Available at All
International Harvester Dealers

- Two models—one 2000 lb. capacity, other 4000 lb. capacity.
- High undercarriage, good traction suits all terrains and pavements.
- Hydraulic lift and tilt engineered for easy maintenance.
- Powered by International Harvester gas tractor engines and chassis of proven ability.
- Standard 96 in. lifting height—72, 108 and 120 in. lifts optional.
- Full line of accessories.

Write for
Details &
Literature

PIPER & PAINE
NUNDA N.Y.

Circle No. 169 on Reader Service Card for more information
154

If you want **SPEED**
plus

- ★ Safer
- ★ Lighter
- ★ Stronger

ECONOMY



If you want to reduce your materials handling cost . . . speed up loading and unloading . . . lower your accident rate . . . then you need a Bronco Magnesium Bridge Ramp.

Bronco Ramps Give You
These Outstanding Features

- ★ Low initial cost—lifetime service
- ★ Maximum strength—minimum weight
- ★ Safety tread surface for full traction
- ★ Positive, adjustable locking device
- ★ Side guards designed to prevent tire damage or equipment run-off
- ★ Carloading or Truck Ramps—Capacities from 1000 to 12,000 lbs.

BRONCO
Magnesium
**BRIDGE
RAMPS**

Write today for information
on the complete line
of Bronco Bridge Ramps.



Circle No. 168 on Reader Service Card for more information
FLOW • JUNE, 1954

"Versaveyor" bag and box handler; and form 53613 describes the Model TL "Versaveyor". Each of the bulletins is well illustrated and contains detailed specifications.

Circle 244 on Reader Service Card

"Floating-Hub":

A new 20-page catalog on the "Floating-Hub" shock-absorbing casters has just been published by The Bassick Company. The catalog describes the unique construction features of the caster, lists types of casters and mountings available as standard production, and provides load ratings for each type and size.

Circle 245 on Reader Service Card

Messenger Conveyor:

A twelve-page, two-color booklet published by Lamson Corporation shows the three major types of vertical conveyor—for mail, books and periodicals, and file records—that are designed to do messenger service in multi-story plants, office buildings, libraries and hospitals.

Circle 246 on Reader Service Card

Battery Maintenance:

An eight-page pocket-sized booklet, Form 5063, on storage battery maintenance has been announced by Exide Industrial Division of The Electric Storage Battery Company. The booklet breaks down battery care to seven basic rules, each emphasized with a catchy cartoon.

Circle 247 on Reader Service Card

Design, Operation, Maintenance:

A new eight-page illustrated brochure published by the Clark Equipment Company describes the design, operation and maintenance of the recently introduced clutchless Hydratork drive. Operational advantages offered by the drive are discussed and illustrated with drawings.

Circle 248 on Reader Service Card

PACKAGING AND SHIPPING PIONEER DIES



E. H. Ashley

Mr. Eugene H. Ashley, one of the founding members of the American Material Handling Society, passed away recently. An ardent supporter of the Society and a member of its National Speakers panel, Mr. Ashley was for years a packaging and shipping consultant for the General Electric Company. He was one of the early pioneers in the development and use of corrugated cardboard shipping containers for the electric refrigerator. Other major contributions include development and use of expendable pallets.

TURNABOUT[®]
ADJUST • A • FORK
HYDRAULIC LIFT TRUCK
with interchangeable forks

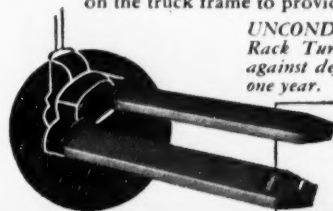
As low as
\$350
 for complete truck

capacity
 2500 lb.

At last, improved design and mass production techniques give you a quality product, properly priced. The Turnabout will immediately prove its superior performance with extra strength where needed most . . . high maneuverability . . . ease of operation. Resinoid type casters and aluminum leader wheels at no extra cost.

INTERCHANGEABLE FORKS: Easily interchangeable forks are available in five standard lengths. They may also be adjusted on the truck frame to provide 25" or 27" width.

UNCONDITIONALLY GUARANTEED: The Rack Turnabout is unconditionally guaranteed against defects in workmanship or materials for one year.



TRUCK COMPLETE

- With either 30", 36", 40", 42", or 48" forks **\$350**
- With either 54" or 60" forks **\$390**

RACK HYDRAULIC EQUIPMENT CORPORATION

CONNELLSVILLE, PENNSYLVANIA

AGENTS IN PRINCIPAL CITIES UNITED STATES, CANADA, EUROPE

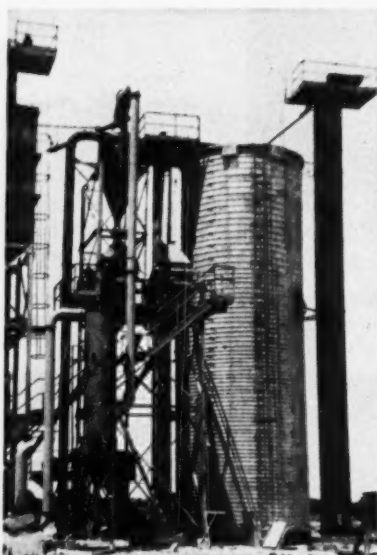
Circle No. 114 on Reader Service Card for more information

HEAVY stuff in N. & F. Silo becomes LIGHT

Raw, crushed perlite is moved through the 16 x 50 foot silo which we erected at the Linden, N. J., plant of the Great Lakes Carbon Co. Perlite is heavy. It weighs 90 lbs./cu. ft. After being sintered, the perlite becomes light-weight aggregate.

You are probably concerned with the handling of other kinds of flowable bulk materials—cement, clay, coal, grain, limestone, ore, sand, wood chips—or any other of the more than 80 varieties for which Neff & Fry Silos are used.

If so, obtain the facts about our silos. We'll be glad to send you interesting literature and answer your questions.



THE NEFF & FRY CO. • 110 Elm St., Camden, Ohio

NEFF & FRY ➔ **SUPER-CONCRETE STAVE STORAGE BINS**



You'll find it so easy to wheel heavy loads in Sterling Barrows. Only a minimum of effort is required. Sterling's perfectly balanced construction permits 80% of the load to be carried on the wheel, only 20% by the operator. This increases efficiency . . . allows more loads to be hauled each day . . . reduces hauling costs.

ORDER NOW!

**DEALER PLAN AVAILABLE.
WRITE FOR DETAILS.**

STERLING WHEELBARROW CO., Milwaukee 14, Wis.



Equipped with steel wheel or wheel with zero pressure or pneumatic tire.

Model C5W with Pneumatic Tired Wheel and Wood Frame.

Look for this Mark of **STERLING** Quality

Sterling 
WHEELBARROWS

Circle No. 125 on Reader Service Card for more information

EXPERIMENTATION . . .

(Continued from page 83)

simplification in a complex system.

The principal gains realized under this program have been made in the work process, or functional operation. With the development of standard plant layouts, and equipment the major problem, simplification and standardization of operations is made much easier. This is the desired result being realized in 25 Ford Division Parts Depots.

Operational Flow

The operation employs all of the features mentioned. Basically, the operational flow commences with the receipt of stock, utilizing both truck and rail facilities. With the assistance of the drag link conveyor and power equipment, stock is readily transferred to storage areas. The arrangement permits rapid unloading and eliminates congestion at the receiving dock.

Records or receipts and shipments are maintained on a perpetual inventory basis. Warehouse layout is arranged to provide easy accessibility to storage areas considering the particular characteristics of parts. Careful consideration also is given to the processing of orders to segregate parts into functional groups. This divides the entire warehouse into basic categories. Each affords a strict numerical sequence which permits immediate location of parts.

Parts orders from dealers are rapidly cleared through the accounting office and stock records. The orders are then forwarded to the warehouse for picking, packing and shipping.

As orders are completed they are forwarded to the shipping department by means of the drag link conveyor. Here they are sealed, scaled and consolidated, at which point they are ready for delivery to the freight carrier. Carrier pickups are scheduled and arranged by a Traffic Department to coincide with the approximate time the order is to be completed.

As another highlight of the varied accomplishments, the safety record of the Cleveland Parts Depot typifies the national picture.

Since its opening in June of 1951, this depot employing 111 people, has had no lost time due to accidents. Safety is stressed constantly on a national scale, and is given full consideration as new equipment and techniques are developed.

The same kind of engineering and materials-handling talent that has been applied by Ford in developing its modern post-war manufacturing facilities is being applied in improving the company's parts distribution operations. The end result, the company says, is better service to Ford dealers, and through them, to Ford owners.

MAGNETIC "MUSCLES" . . .

(Continued from page 89)

rails, rods and construction shapes. Rectangular magnets as made by some companies are provided for cold rail handling, and similar duty, with single thickness, renewable bronze bottom plates. But where provided for hot work, the bottom plates are made in double-thickness with asbestos, heat-insulating bricks.

Duplex magnets really consist of two magnets arranged in a single case. This equipment may be either round or rectangular. This type is often used for han-

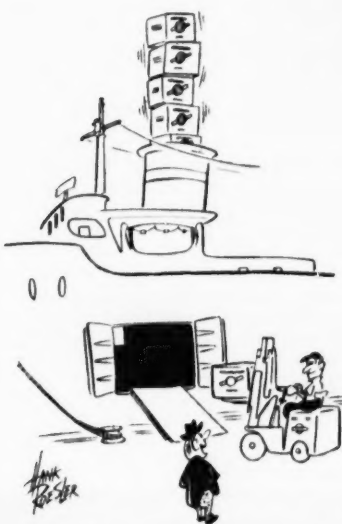
dling large flat-topped items, such as slabs or sheets. Duplex magnets have also been used to some extent for handling coils of strip steel, or car wheels, where it is necessary to lift the wheels from the flange. However, bipolar magnets are particularly well suited for these latter duties.

Certain lifting magnets designed for extra heavy, rough service, including skull-cracker work, are known as **basket magnets**. These have an outer ring of extra-heavy cross section. In this ring, spaced

90 degrees apart around its circumference, are four large "ears". These, together with the heavy outer ring, serve to ward off blows which might otherwise damage the magnet. They practically eliminate the possibility of broken outer rings, thus further increasing the life of the magnet.

Four-Point Magnet Suspension

Whereas most lifting magnets are provided with three-chain suspension, these basket magnets have



"Hi, Eddie—how are things stacking up?"

NOW! MORE AND FASTER DELIVERIES AT LOWER COST...

New and faster methods of material handling in loading and unloading trucks have offset the rising costs of delivering merchandise of every description. Now Anthony Lift Gates reduce costs still further by: lighter weight—to permit more payload per trip—more payloads per day; by using only ONE cylinder and ONE control lever for ALL operations—greatly simplifies and cuts manual time per delivery—74% fewer operating parts minimizes maintenance.

10 important reasons why Anthony Lift Gates can cut your delivery costs up to 50% are explained in New Brochure just off the press. Send for your copy today.

ANTHONY LIFT[®] GATES

In sizes up to 4000 lbs. for all trucks and semi-trailers.



One Cylinder alone does all operations—opens, closes—lifts and lowers gate.



Patd. & Pats. Pend.
U. S. and Foreign

Anthony—the Power to lower delivery costs.

ANTHONY COMPANY STREATOR, ILLINOIS
DEPT. 5403-B

Circle No. 8 on Reader Service Card for more information

DEMAND

the
CASTERS & WHEELS
that
Always **SWIVEL**
and **ROLL**

MADE BY
DARNELL



Enjoy the advantages of easily movable equipment, full protection of floors and the elimination of damage to equipment due to wracking, at no additional cost over ordinary casters and wheels.

**FREE
DARNELL
MANUAL**

DARNELL CORP., LTD.
DOWNEY, (Los Angeles County) CALIF.

60 Walker Street, New York 13, N.Y.
36 North Clinton, Chicago 6, Illinois

MAGNETIC "MUSCLES"

Continued

four-point alloy chain suspension, from heavy steel pins which are anchored into the ears. In consequence, no load is carried by the bolts, which serve merely to position the coils. Such magnets are available in four-coil, six-coil and eight-coil types.

Coil handling magnets, particularly suitable for handling strip steel on end, are in more or less general use in the steel industry. It is obvious that any others having coiled strip steel to handle can make use of such magnets to advantage. Four-coil magnets, designed for handling a single coil of strip steel, are often double bipolar magnets, designed in such a way that the flux path is circumferentially through the coiled steel, instead of radial.

However, coil-handling magnets, of either bolted or welded construction, may be either single or multiple-magnet units. Coil-handling magnets are often con-

Circle No. 106 On Reader Service Card

NOLAN ONE-MAN CAR DOOR OPENER



Opens Doors in 20 seconds or less!



The Nolan Car Door Opener gives one man a tremendous amount of pulling energy, to get the most stubborn, hard-rolling door wide open in a hurry! New chain has 2000 lbs. tensile strength. No gangs needed. No mangled limbs or loss of life. A few quick pulls on anchor chain gets any door open in a jiffy. The NOLAN saves its low initial cost in first hour of operation. New safety and efficiency features now make the Nolan 1-Man Car Door Opener a more necessary labor-saving money-saving help than ever before.

Many thousands in constant daily use!

Free Literature. Order one or more NOLAN Model-H Car Door Openers now. Catalog on request.

The NOLAN Co.,
100 Pennsylvania St.
Bowerston, Ohio

\$37.50

F.O.B. Bowerston



LIFT-O-KRANE

**is rough,
tough and
ever-willin'**

With this versatile LIFT-O-KRANE you can do the impossible . . . Use it as a Crane Truck, a Fork Lift Truck and/or as a Ram Truck.*

Silent Hoist heavy duty LIFT-O-KRANE is designed to make the most difficult job "all in the day's work." Take, for example, one of the 5 ton capacity LIFT-O-KRANES in daily duty at SUN OIL COMPANY, Marcus Hook (Pa.) Refinery. Here it is shown easily handling a bulky, unbalanced, heavy-to-handle accumulator tank. Its next job may be dragging lengths of pipe lines and locating them properly in ditches . . . then lifting and moving giant valves and heat exchangers and installing them in their proper place in the refinery lines. According to one Sun Oil executive, LIFT-O-KRANES lift and serve, day after day, with efficiency and dispatch, and replace entirely any need for regular cranes.

***3-IN-1 MACHINE:** { With integrated BOOM Attachment—handle Hook Loads.
{ With RAM Attachment—handle Hollow-Center Loads.
{ With its FORK Tines—handle Timber, Machinery, etc.

You, too, should investigate the tough, maintenance-free service of LIFT-O-KRANE Combination Machine . . . and LIFTRUK Heavy-Duty Fork Truck . . . in 5 - 7½ - 10 - 15 ton capacities. Send for Bulletin 77.

SILENT HOIST & CRANE CO.

Pioneers of Heavy Duty Materials Handling Equipment
888 63rd Street, Brooklyn 20, N. Y.

Circle No. 122 on Reader Service Card for more information

FLOW • JUNE, 1954

Circle No. 43 on Reader Service Card

FLOW Receives Safety Award

For the series of articles on safety and material handling in the December 1953 issue of FLOW, this publication has been named winner of the 1953 *Public Interest Award* by the National Safety Council.

In notifying FLOW of its selection for this honor, the National Safety Council said "it is made annually to public information media for exceptional service to safety".

The December issue of FLOW included five major features, comprising a total of 27 pages, on phases of safety in connection with material handling. The lead article, titled, "Material Handling Accidents . . . An Industry Headache, showed that one out of every three industrial accidents results from poor handling practices which could be eliminated by better methods and equipment. A 14-page article, "Prescription for Preventing Handling Accidents", detailed safe practices in the operation of handling equipment.

Plant safety, apart from that in the use of mechanized handling equipment, was stressed in "Are Your Building Saboteurs of Material Handling?" Yard operations were thoroughly covered in the article, "Cutting Outdoor Handling Risks".

The National Safety Council has obtained 8,000 reprints of the entire editorial section, bound into a 32-page booklet, for its own distribution.

The American Material Handling Society is also distributing a copy of the booklet to each of its members as part of the program in which reprints of the most significant articles dealing with material handling are to be provided to all members.

Formal presentation of the award is to be made to the editor of FLOW at a luncheon on June twenty third.

**Improve Your
MATERIAL HANDLING!**

**The 1954-55
Flow Directory**

See Page 176

structed to weigh less than other magnets of equivalent lifting power because they are not subjected to as much abuse. Some manufacturers fit them with a smooth manganese bottom plate to protect edges of coil being handled.

Plate-handling magnets usually of rectangular type, are much used with bridge cranes. In some cases, a motor-generator set is installed on the crane to supply direct-current power for the magnet. Cases have been observed where a single magnet of this type will handle an alloy steel plate 1 inch thick, six feet wide and 25 feet long. Where plates are thinner, and therefore have far greater tendency to bend when lifted, use of two or more such magnets on a spreader bar is recommended.

A case can be cited where a single rectangular magnet was employed to unload 50 tons of steel plates from an open-top railway car and stack them in a storage area—in 40 minutes. Plates 72 x 144 inches, some 3/16 inch thick, others 1/4 inch, were indiscriminately piled in the car and lifted out 5 at a time.

There are many places throughout industry where something special in the way of magnetic lifting equipment may be employed. For example there are instances where cans (loosely called tin cans) are handled in bulk. Such lifts, obviously, will be of design different from that of the usual lifting magnet. But they are suitable for use not only in plants where cans are made but also in plants of large food-packers. There are cases where duplex type lifting magnets are arranged on special hangers for slab-turning operations, simplifying an operation which would otherwise be extremely difficult. The drawing power in magnets is also applied to different types of equipment for clamping, aligning, separating, suspension over conveyors for the removal of tramp iron, etc. Now that mobile and truck-mounting cranes are in use in so many places, lifting magnets suitable for them are being made increasingly versatile.

One highly interesting and significant development is the contoured lifting magnet designed



**BAGS, BULK,
BARRELS, BOXES
MECHANICALLY!**

You can save time and money with increased safety by installing a CESCO Skip-Hoist Dumper. Lifts, upends and dumps 100 loads per hour with a lifting capacity range from 100 to 1500 lbs. Single and multi-purpose portable models in standard heights from 6 to 10 ft. Stationary models to 20 ft. Easy, safe operation from push button controls speeds up material handling and eliminates accidents.

Write for complete catalog . . .

ESSEX CONVEYORS, INC.
165 Franklin Avenue, Nutley 10, N. J.

COLSON EQUIPMENT & SUPPLY CO.
1317 Willow Street, Los Angeles 13, California

CESCO SKIP-HOIST DUMPERS

Circle No. 41 on Reader Service Card

CUTTING *Your Costs* IS OUR BUSINESS

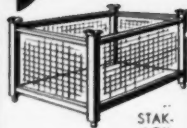


IT CAN BE DONE with CERCO STAK-PAL SYSTEM of Material Handling

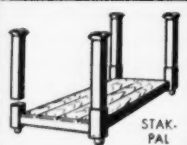
STAK-PAL tubular stacking racks have been designed to handle quickly and efficiently your every storage need. Stacking operations are safer, easier and trouble-free with removable corner posts or end frames. QUANTITY PRODUCTION, STANDARD SIZES and our own SEAMLESS TUBE MILL assure you of a low cost product, combined with quality workmanship. All STAK-PAL tubing, square or rectangular has minimum 11 gauge wall for rugged strength and almost complete elimination of maintenance costs. Specials made to specifications.

Let us prove these facts —

Write for catalog giving you complete information.



STAK-BOX



STAK-PAL



COIL RACK



END FRAME RACK

C. E. ROBINSON CO.



Manufacturers of
Metal Products

222 COLBURN AVENUE
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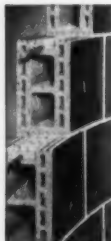
BREWERY

stores grain, malt,
sugar in multiple

Kalamazoo

VITRIFIED GLAZED TILE
INDUSTRIAL STORAGE SILOS

Here's another of the many industries using Kalamazoo storage silos. You, too, will get advantages unequalled by other bins or methods — materials protected from weather, contamination, fire, theft. First cost the only cost — no maintenance problems.

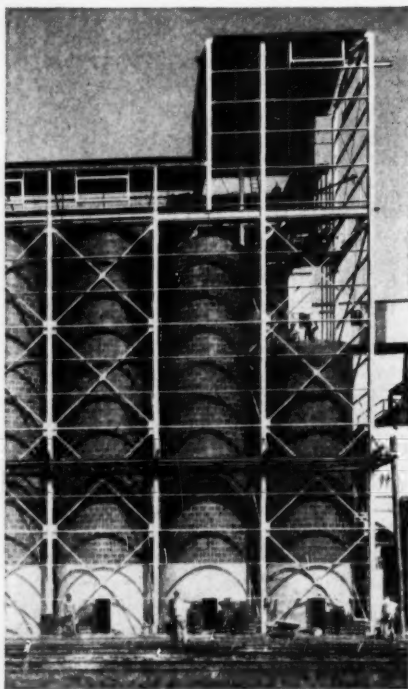


Corrosion-resistant vitrified glazed tile double-wall blocks made in Kalamazoo's own plant. Corrosion-proof mortar joints.

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INDUSTRIAL STORAGE BIN DIVISION



Kalamazoo TANK and SILO COMPANY

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Circle No. 78 on Reader Service Card for more information

MAGNETIC "MUSCLES"

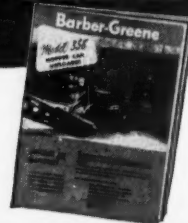
Continued

for special applications and to increase the area of control. The development of these magnets provides better lifting capacity for less weight of magnet. Such devices are found highly useful in handling such items as wire coils, steel shapes, and pipe.

Relatively new industrial lifting devices, which have great versatility for lifting ferrous parts up to one ton, consist of a 7 x 12 inch magnetic chuck, with a heavy metal case built on the back of the magnet. This case mounts a 6-volt automobile-type storage battery and provides a handy, self-contained unit, designed for application to overhead cranes, motorized lift trucks, and similar equipment.

For information and pictures, FLOW thanks Allen-Bradley Co.; Cutler-Hammer, Inc.; Dings Magnetic Separator Co.; Electric Controller and Mfg. Co.; Ohio Electric Mfg. Co.; D. W. Onan & Sons; Ritz Mfg. Co.; F. W. Shrader Co.; Sundstrand Magnetic Products Co.; and O. S. Walker Co.

This Barber-Greene FOLDER



SHOWS HOW

1 man can move
3 tons of material in
60 seconds with

B-G CAR UNLOADER

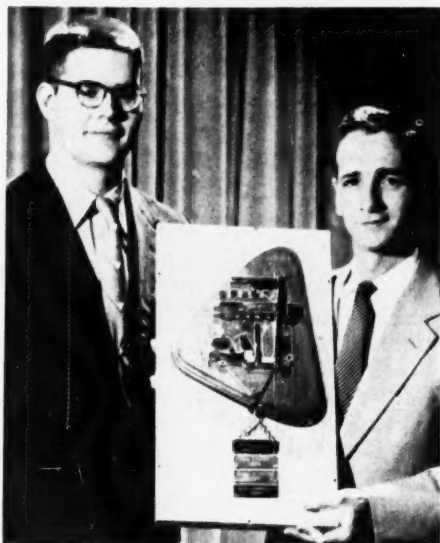
see your B-G distributor
or write

Barber-Greene
AURORA, ILLINOIS, U. S. A.

Circle No. 30 on Reader Service Card
FLOW • JUNE, 1954

Wunsch Award Winners

Winners of the 1953 Wunsch Foundation Awards at Fenn College, Cleveland, are Richard E. Anderson and Robert L. Bede. The awards, established by a grant from J. W. Wunsch, President of Silent Hoist



& Crane Co., brought Anderson \$125 for First Prize and Bede \$75 for Second.

The Board of Review which determined the winners comprised: N. R. Rimboi (Secretary), Director of the Fenn Technical Institute; G. Brooks Earnest, President of Fenn College; Mr. Lester M. Sears, Chairman of the Board of Towmotor Corp.; Dr. D. C. Fabel, Chairman of the Department of Mechanical Engineering, Fenn College; Mr. J. A. Sedlak, lecturer on material handling at Fenn; and Dr. James C. Hodge, Vice President of Wellman Engineering Co.

neering, Fenn College; Mr. J. A. Sedlak, lecturer on material handling at Fenn; and Dr. James C. Hodge, Vice President of Wellman Engineering Co.

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IS BEST
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Made by the
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LIFT TRUCKS
PALLET TRUCKS
(hand & power)
POWER FORK TRUCKS
TRACTORS
TRAILERS
FLOOR TRUCKS

WHEEL CONVEYOR
at a NEW LOW PRICE

(for a limited time)
\$26⁹⁵
per 10-foot section*
12" Width

**BREAK THE BOTTLENECK OF
SLOWED-UP LOADING WITH A
MARFORGE LOAD-VEYOR**

Market Forge LOAD-VEYORS are the "magic carpet" of material handling operations... your loads literally "flow" to their proper destination. If you want to save money at the profit end of production, use the MARFORGE "Load-Veyor" system — it's the lightest, strongest, most economical conveyor you can use.

F.O.B. EVERETT

Representatives in all
the principal cities

Bottlenecks in business destroy profit! **Speed** in the loading, unloading and moving of YOUR merchandise is the factor that breaks bottlenecks in handling operations, and gives you an even flow of production.

*Prices of curves, stands and 5-foot sections on request.

58 years in the Materials Handling business

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FLOW • JUNE, 1954

Market Forge Company
MATERIALS HANDLING DIVISION
35 Garvey St., Everett 49, Mass.

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MOVING PERSONNEL



HAULING LIGHT MATERIAL



TRANSPORTING SUPPLIES

Autoette has designed especially for American industry two electric pickup trucks that provide a new approach to light materials handling problems... the 1/4-ton pickup, ideal for moving personnel — maintenance men, watchmen, mail girls... the 1/2-ton truck for tools, supplies, equipment. Both are the last word in efficiency, safety and economy. Send for free information on how Autoette serves your industrial needs.

AUTOETTE

World's Lowest-Cost
Transportation

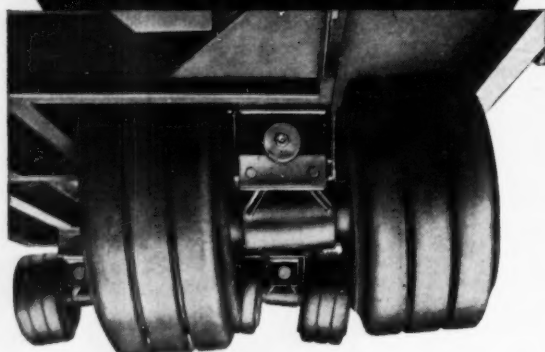
AUTOETTE, INC., Dept. 1164
730 West Esther, Long Beach 13, Calif.
Please send me information on how Autoette pickup trucks can serve my particular industry.

Name.....
Title.....
Company.....
Address.....
City..... State.....

Circle No. 162 on Reader Service Card

ARTICULATED AXLES

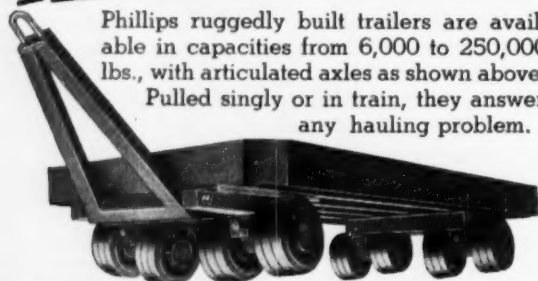
**Carry Heavy Loads
SAFELY
OVER ROUGH TERRAIN**



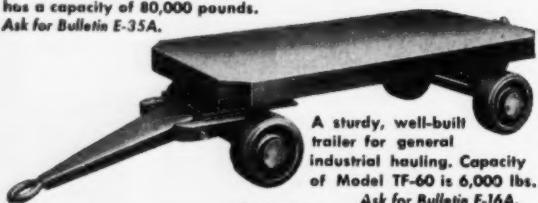
Phillips *Industrial* TRAILERS

Phillips ruggedly built trailers are available in capacities from 6,000 to 250,000 lbs., with articulated axles as shown above.

Pulled singly or in train, they answer any hauling problem.



The heavy-duty Model TFU-800 has a capacity of 80,000 pounds. Ask for Bulletin E-35A.



A sturdy, well-built trailer for general industrial hauling. Capacity of Model TF-60 is 6,000 lbs. Ask for Bulletin E-16A.

PHILLIPS
MINE AND MILL SUPPLY COMPANY

2300 JANE STREET
PITTSBURGH 3, PA.

Manufacturers for 90 Years

Circle No. 112 on Reader Service Card for more information
162

NEW EQUIPMENT . . .

(Continued from page 44)

Low Clearance Electric Truck

The Yale & Towne Manufacturing Company has announced a new low-clearance, narrow-width electric fork truck called the "Safety Silhouette". Designed especially with the particular requirements of over-the-road vehicle loading in mind, the truck is said to simplify pallet loading in tight spaces.



Available in 2000 and 3000 pound capacities, the unit is powered by a 15 KWH, 30 volt battery. The 50 inch wheel base truck is equipped with 36 inch forks, pivots around a 90 degree corner in a 61 inch aisle, and can right angle turn in a 119 inch aisle. Forks are adjustable from 10 inches to 31½ inches. Loads can be stacked 100 inches above floor level. Tilt is 3 degrees forward and 10 degrees backward. Mast height is 68 inches.

Circle 201 on Reader Service Card for more information

12 Ton Gas-Electric Crane

A 12 ton self-propelled crane to bridge the gap between 7½ and 15

ton models is being marketed by Coles Cranes, Inc. Powered on the gasoline-electric principle, economy is said to be one of the main features of the model which will operate on as little as one gallon per hour. Overall crane dimensions are 13 feet 1 inch x 8 feet 3 inches; tail swing is 6 feet 6 inches. Available with either the cantilever or strut type with boom, the unit can be supplied with double drums for clamshell operation. Boom lengths up to 60 feet may be obtained. The safe-load indicator and safety limit switch are standard features.

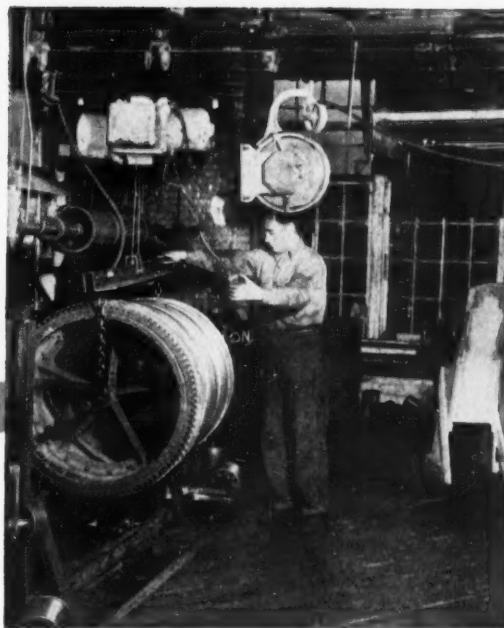


Circle 202 on Reader Service Card for more information

Five Ounce Radio

A small radio receiver, which can be worn like a hearing aid, has been developed by General Electric engineers. Described as an experimental model, the radio is tuned to a single broadcast frequency, 1240 kilocycles. It has a hearing-aid

How to reduce damage in materials handling

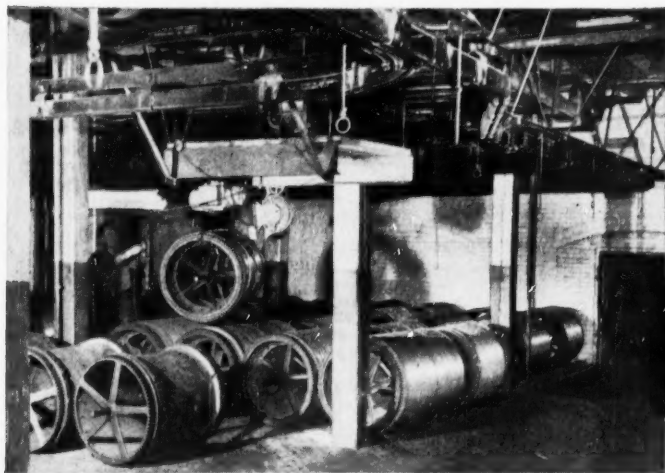


Here's a typical example of how Coburn Overhead Conveying Equipment can reduce costly product damage in materials handling operations and speed up production where loads range up to 3000 pounds.

In the pictures shown here, heavy steel drums spooled with steel wire are shown being lifted from the spooling machine by electric hoist; after which they move smoothly along a Coburn monorail and are conveniently spotted into the desired location for temporary storage prior to further processing.

Formerly, these drums were moved entirely by hand truck. Installation of Coburn Overhead Conveying Equipment has effectively reduced the chance of damage to the wires on the drums—besides making for faster operation and providing greater safety and ease of handling.

If you have a materials handling problem, why not let us show you how Coburn Overhead Conveying Equipment can achieve the same results for you. Write for Catalog No. 220 to Coburn Sales and Engineering, 56 Sterling St., Clinton, Mass.



Photographs through the courtesy of Wickwire Bros., Inc., Cortland, N. Y.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

COBURN PRODUCTS

PRODUCTS OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



2212

One fine

could have bought several

MARTIN-DECKER LIFT TRUCK SCALES



Weigh it!

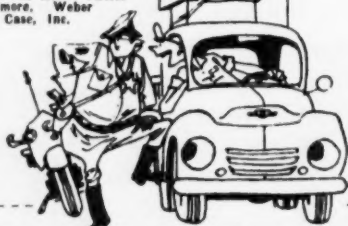
as you lift it

This inexpensive device shows the driver the exact weight picked up thus assuring a full load with safety. It can be used to totalize loads and check records of stock and inter-plant storage. Permits floor weight distribution. Prevents elevator overloads. Safeguards equipment and life.

*Fits any hydraulic
cylinder type lift truck*

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- ☐ Please send literature on Martin-Decker Lift Truck Scale.
☐ Have local representative call for an appointment.
DEPT. MH-34

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TITLE _____
COMPANY _____
CITY _____ **STATE** _____

MARTIN-DECKER CORP.
 HOME OF THE WEIGHT INDICATOR — LONG BEACH, CALIFORNIA

Circle No. 92 on Reader Service Card for more information

164

type earphone and weighs about five ounces. It can be slipped into a shirt or vest pocket, and is said to be capable of continuous operation for more than a month without battery replacement. Long battery life is accomplished through use of germanium devices (a transistor and double-based diode) which do the radio detection and amplifying work with less power requirements than conventional radio tubes.

Circle 203 on Reader Service Card for more information

Spherical Caster

A unique type caster is being marketed by the Wright-Batchelder Corporation. Termed the "Shepard Caster", specifications are listed as: $\frac{3}{8}$ inch steel pivot; caster housing and locking pin; $\frac{3}{8}$ inch steel axle. Features highlighted are: rugged 4 part assembly; permanent lubrication; easy glide; quiet; modern design; no bolts or screws. It is said that this patented product will not cut or mar floors and that

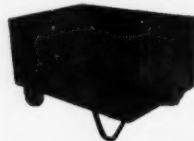


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and Inexpensive with**

IRONBOUND SEMI-LIVE SKID PLATFORMS



Ruggedly built with capacities up to 2500 lbs. These units are quickly made mobile with the use of low cost lift jacks . . . One of the methods that Ironbound engineers use to increase production and conserve space at low cost.



SEMI-LIVE SKID WITH BOX TOP

. . . permanently attached or removable. Also available with many other superstructures to "Short-Haul" your products thru production or into storage. Useful in hundreds of spots in every plant.

THE IRONBOUND "SAFETY-SKID" WITH ROUND CORNERS

Ironbound construction assures long hard use with complete safety to product and operator. Still the time proven method for handling of materials efficiently and economically.



IRONBOUND
BOX & LUMBER COMPANY
 Materials Handling Division
 30 HOFFMAN PLACE • HILLSIDE, N. J.

MANUFACTURERS OF QUALITY BUILT SKIDS, SEMI-LIVE SKIDS, FLOOR TRUCKS, ROLL TRUCKS, DOLLIES AND PRY BARS
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FLOW • JUNE, 1954

How to adapt **LORAIN CRANE** *FLEXIBILITY* **TO YOUR HANDLING NEEDS**

Here's how Allegheny Ludlum Steel did it...

What type crane does your plant need? Look at it the way Allegheny Ludlum Steel Co. of Pittsburgh, Penna. did... they selected a different type Lorain for their plants at Watervliet, New York and Leechburg, Penna. Each Lorain has a different lifting capacity and a different mounting to meet most efficiently work and travel conditions at each mill. Materials to be handled were similar, but weight of materials and travel demands varied. A study of these two installations will prove how Lorains can be fitted to your individual plant needs.

If you have wondered about the size, lifting capacity, type of mounting, attachments for handling various types of material... or the savings possible with a Lorain, your Thew-Lorain Distributor can answer your questions. There is no better place to go with your material handling problem, because he offers the most complete selection of crane power for your plant—large or small.

1

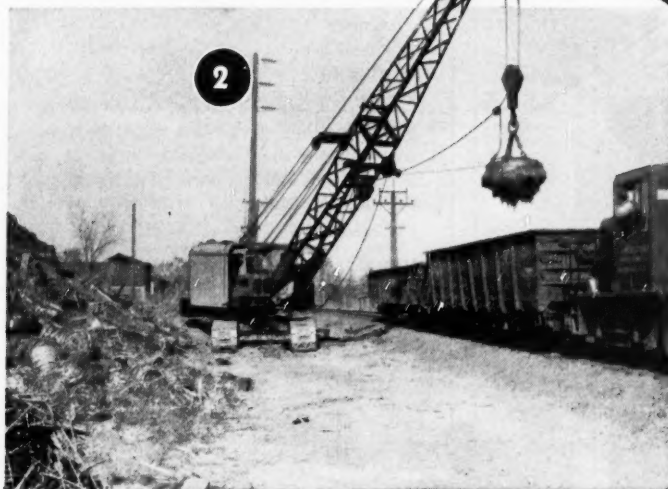
LEECHBURG, PENNA.

This Allegheny Ludlum plant needed mobility to move quickly around the yard... so they selected a rubber-tire Lorain Self-Propelled Crane. This Lorain gives them unlimited mobility up to 7 m.p.h. to serve all sections of the yard. Both magnet and clamshell bucket are used to handle scrap metal and steel turnings.

2

WATERVLIET, N. Y.

For steady loading and unloading of scrap, handling ingots and ingot molds, and lifting heavier loads up to 20 tons, a larger Lorain Crane, model L-80J, was selected for this Allegheny plant. For this work, crawler mounting was the answer. Clam, sling and magnet are used for different materials



What's Your Material Handling Problem?

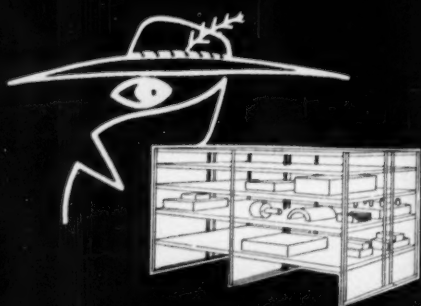
There's an advantage if you bring your plant problem to your nearby Thew-Lorain Distributor. He will study your needs and give you "engineered" production and cost data. Remember, he offers more selection in mountings and capacities, from 6 to 61 tons.

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN.

OFFERING MORE THAN 136 SHOVEL-CRANE
COMBINATIONS ON CRAWLERS OR RUBBER-TIRES
... TO BEST FIT YOUR JOB FOR PROFIT!

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"Got some merchandise you want held up, Bud?"

Rack up with the

RAK-A-TIER®

Manufactured and distributed by

ARTCO CORPORATION

Flourtown, Pa.

for Better Belt Joints

To keep belts in service longer, use only **GENUINE Clipper Belt Hooks** applied with **Clipper Belt Lacers**.

use Clipper Belt Hooks

Clipper Hooks are made of the finest quality wire—**BETTER** than ever before—produced for our exclusive use. Hooks hold with firm, sure grip—give longer satisfactory service.

and Clipper Belt Lacers!

With the **Clipper No. 9 Portable Lacer**, you can lace up to 6 inches of belt in one quick, easy operation. For wider belts, merely repeat the operation.

Phone your Industrial Distributor for a demonstration!

CLIPPER BELT LACER COMPANY, GRAND RAPIDS 2, MICHIGAN, U.S.A.



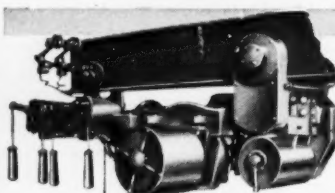
Circle No. 37 on Reader Service Card for more information
166

its spherical shape guards against snagging, scraping or scratching. The 2½ inch steel wheel has an overall height of 3⅞ inches. The rubber tread caster, 3 inches in diameter, has an overall height of 3⅜ inches. Load capacity of both casters is 100 pounds.

Circle 204 on Reader Service Card for more information

New Charger Enters Field

The Lincoln Electric Company has entered the charger field with the production of a "Precision-Charge" line of equipment. Designed for use with Edison industrial truck batteries, three models cover the charging requirements for batteries of 10 to 42 cells. The correct charging rate for any battery is set with a single charging current control. The only other control required for operation of the unit is the time control. This automatically starts the unit, connects the battery to the charging circuit and stops the unit when the battery is fully charged. A



move it
overhead
with

ELECTROLIFT

Materials will move faster and with less waste motion when you move them over crowded aisles with ElectroLift worm drive hoists. Any ElectroLift will quickly pay for itself in savings in time, power, labor and reduced accidents.

Built for long, profitable and trouble-free service, the ElectroLift hoist is available in a wide variety of models up to 6 tons capacity with optional pushbutton control.

Get all the facts on ElectroLift by contacting your ElectroLift representative listed in your telephone directory.

ElectroLift, Inc.

204 Sargeant Avenue, Clifton, N. J.

2178



Circle No. 49 on Reader Service Card for more information
FLOW • JUNE, 1954

completely discharged battery can be brought up to full charge in seven hours. Batteries are fully protected during the charging cycle, as recommended by the Industrial Truck Association. In the event of power supply failure during charging, the unit is disconnected from the power line, and the charging circuit is opened. Charging automatically restarts with the resumption of power supply. The chargers are motor generators of compact design and welded steel construction. Circle 205 on Reader Service Card for more information

Clamp Speeds Handling

A clamping device specifically engineered for palletless handling of wooden cases and similar loads has been announced by The Elwell-Parker

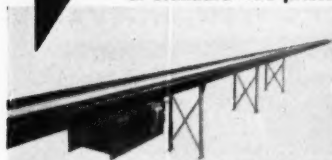


Electric Co. The attachment consists of a standard hydraulic clamp and a pair of heavy forks. The forks permit clamping of various containers and are also designed for handling of palletized loads in the conventional manner. The clamp arms or forks are equipped with sharp, pointed studs on their inner surfaces to insure a positive grip on the load. The

Clamp arms or forks are equipped with sharp, pointed studs on their inner surfaces to insure a positive grip on the load. The

Speedways Conveyors NEW Speed TABLE

The power belt conveyor with Custom-specified utility at Standard-line prices



10 foot increments easily bolt together. Powerful SpeedDrive motor can be located in any section of line.

for inspection line • assembly line • work tables
order make-up conveyor • shipping-receiving conveyor

All or any of these operations can be accomplished with a single Speedtable installation. This is the exciting feature of SpeedTABLE for it has a flexibility of use . . . it can easily be lengthened or shortened, disassembled and set up again in other areas of your plant to do many duties.

It is a revolutionary idea in belt conveyor design . . . that can revolutionize your materials handling methods. Write for complete details and low, low prices today. Ask for new SpeedTABLE BULLETIN B354.



165 Speedways Bldg.

Buffalo 13, N. Y.

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FLOW • JUNE, 1954

PneuBin

saved

\$24,000.00

per year on a total investment of \$1460!



Savings on time, labor and uninterrupted production flow amounts to \$2,000.00 per month for one PneuBin Customer.

Here's the proof that PneuBin can save money for its users. By eliminating material stoppages in bins and hoppers, this PneuBin installation is piling up huge savings for its owner. Read this excerpt from a letter* received by the general sales manager at PneuBin:

" . . . we wish to advise you that we have benefited by the installation of the PneuBin, not only through savings in labor and material, but more important by uninterrupted production, for which we estimate a total of \$2,000.00 monthly savings. In view of the excellent results, we have recommended the PneuBin to our Central Engineering Department for installation wherever similar difficulties are encountered."

*Complete letter on request.

How would you like to have an annual return of 1643% on a \$1460 investment.

Take a tip from this company who has solved its flow stoppage problems with PneuBin. Let a PneuBin engineer show you how your company can effect big savings by decreasing your material flow problems.

PneuBin is designed to alleviate flow stoppage problems in your bins through the principle of "positive displacement." PneuBin moves the bin contents . . . not the bin. PneuBin neoprene panels, mounted on the inside walls of the bin, operating off the plant air supply, will eliminate rat holing, bridging, caking or high-viscosity hang-up.

SIZES: PneuBin panels are available in 14 standard sizes, 4" to 24" wide, 6" to 72" long. Special sizes can be made if required in quantity.

Send for **FREE literature** and "Flow Stoppage Report." PneuBin engineers will make recommendations with no obligation on your part.



is a product of

GEROTOR MAY CORPORATION
BALTIMORE 3, MARYLAND

Manufacturers of Gerotor Hydraulic Pumps and Motors.
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Circle No. 73 on Reader Service Card for more information



HOBBS Engine Hour METERS

*New and improved
through continuing
engineering research*

Your lift trucks and other powered materials handling equipment last longer and require fewer repairs when a definite program of protective maintenance is followed. **TIMELY** care prevents major repair... **HOBBS HOUR METERS** tell you **WHEN** it's time to lubricate, change oil, overhaul, etc.

NOT A REVOLUTION COUNTER

It's an electrical timing instrument that shows **HOURS** and **MINUTES** of any engine operation. Provides the accuracy that's important for genuinely effective protective maintenance.

APPROVED BY LEADING MANUFACTURERS

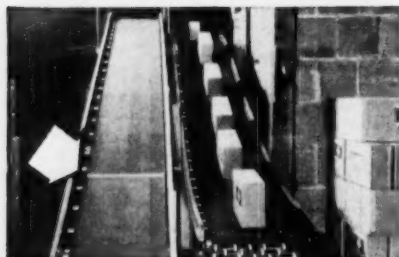
Installed as original equipment or recommended as an approved accessory by leading makers of materials handling equipment. Ruggedly built... easy to install... low in price. See your factory branch, representative or distributor... or **WRITE**:

ORIGINATED AND MANUFACTURED EXCLUSIVELY BY

John W. Hobbs Corporation
2061 YALE BLVD. SPRINGFIELD, ILLINOIS

ALLIGATOR

CONVEYOR BELT LACING



Every
Tooth
A Vise*

in Long Continuous Lengths for Conveyor Belts

- ★ Excellent for Package Conveyors, Portable Loaders, Trenching and Ditching Machines, etc.
- ★ In canneries where corrosion or rust is a problem specify Alligator made of Stainless or Monel.
- ★ For magnetic separators or anti-sparking specify Alligator made of Everdur.
- ★ Separable and smooth on both sides.
- ★ 12 sizes. For belts from 1/16" to 5/8" thick—and any width.

Order from Your Supply House. Ask for Bulletin A-60.

FLEXIBLE STEEL LACING CO. 4702 Lexington St., Chicago 44, Ill.

JUST A HAMMER TO APPLY IT

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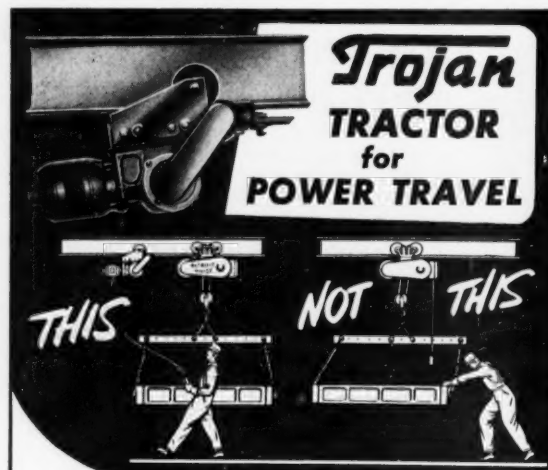
168

front stud on each fork is positioned to permit inverting or dumping a container. The studs make only small indentations in the container and do not damage the contents. The clamp has an opening ranging from 18 inches minimum to 66 inches maximum. A safety valve automatically maintains clamping pressure, to prevent dropping the load.

Circle 206 on Reader Service Card for more information

New Design Electric Tractor

Mercury Manufacturing Company has announced a completely new "Tug" electric tractor, identified as Model 550. The new design is available in either twin-three or conventional four-wheel types. Drawbar pulls of 2500 and 3000 pounds are offered. New design features include: automobile type wheel steering; an all new unit-assembled double reduction drive; self-energizing hydraulic brakes; Timken duo-grip,



Attached by a simple draw-bar, the Trojan Tractor quickly converts existing, slow, hand-pushed hoists and light overhead cranes into fast, power-traveled units. Save time, effort; reduce material handling costs.

• Ask for Trojan Tractor Bulletin 810 today.

DETROIT HOIST & MACHINE CO.

8263 Morrow St., Detroit 11, Mich.

Designers and Manufacturers of Hoists and Cranes

Since 1905



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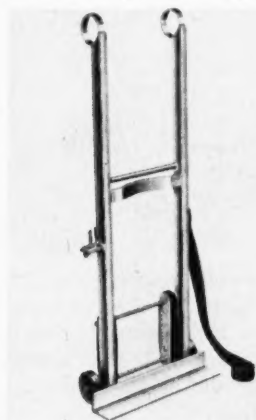
FLOW • JUNE, 1954

seat actuated mechanical parking brake; four speed magnetic contactor travel control with adjustable timed acceleration and controlled plugging, and demountable wheel rim and tire assemblies. Pneumatic tires are optional on the standard four-wheel model.

Circle 207 on Reader Service Card for more information

Appliance Truck Eases Handling

A new style all-magnesium appliance handling truck with "endless-belt stair-climber" treads is being marketed by The American Pulley Company. Called the Ezy-Up Model "A", the endless-belt stair-climber tread consists of thirteen free-rolling rollers with an endless belt, correctly located to prevent the truck frame from contacting or marring steps. A web strap and patented, self-tightening leverage buckle welded to the truck frame gives quick, positive locking of appliance to the truck. The Ezy-Up Model "B"



MERRILL MATERIALS HANDLING DEVICES



13-M-2

MERRILL BROTHERS

56-74 ARNOLD AVENUE MASPETH, N. Y.

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Well Stacked!



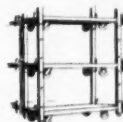
Pallet Racks



Coil Racks



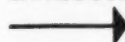
Stock Racks



Dolly Racks

In commodity warehouses and manufacturing plants "EMI" strong, safe, better engineered, stacking racks can save handling time and space from receiving to shipping. Our engineers are available to study your operation and make suggestions.

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CATALOGUE



**EQUIPMENT
MFG. INC.**

21552 HOOVER ROAD,
DETROIT 5, MICHIGAN

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Circle No. 155 on Reader Service Card for more information

ASHWORTH

Process Belts

... engineered for the Specific End Use are designed to Keep Your Product on the Move, provide long life and low maintenance. Fabricated from carbon steel, aluminum coated steel, low chrome-silicon alloys and nickel-chrome analyses as determined by the end use.



WRITE FOR
ILLUSTRATED
CATALOG 52F

ASHWORTH BROS., INC.
METAL PRODUCTS DIV. • WORCESTER, MASS.

Sales Engineers:

Seattle • St. Paul •

Buffalo • Chattanooga • Chicago • Cleveland • Detroit • Kansas City
Los Angeles • New York • Philadelphia • Pittsburgh • Rochester
— Canadian Rep., PECKOVER'S LTD. • Toronto • Montreal

JAKES

America's Finest
Industrial Trucks and Trailers



MODEL NO. 30A-6P

Various platform sizes - Capacity 6,000 lbs.
SPECIFICATION SHEETS AVAILABLE

JAKES FOUNDRY COMPANY

Established 1891

2800 Charlotte Avenue

Nashville 9, Tennessee

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170

truck is very similar to model "A", except that it is steel. Although the stair-climber treads come as standard equipment, either model may be obtained without this feature.

Circle 208 on Reader Service Card for more information

"No-Dust" Sweeper

Objections about dust-pollution of air when powered floor sweepers are used are said to have been overcome with the new Parker Turbo Sweep. Utilizing a turbine principle, the sweeper sucks dust from the air at a rate of more than 300 cubic feet per minute. Heavy-duty fibre brushes whisk debris into a 1.6 cubic foot collecting hopper. All controls are within easy reach of the operator. There are no foot pedals or kick levers. Powered by a 2 hp Clinton gasoline engine, the unit is self-propelled. The 40 inch sweeping width is said to permit cleaning of more than 40,000 square feet of floor area per hour.



Circle 209 on Reader Service Card for more information

Troubled with broken floors?

Fix Them Fast With

SPEED PATCH

without halting traffic

World's finest fastest floor fixer! Simply patch holes and truck over them immediately, no waiting. Ready-mixed. Millions of pounds used regularly by industry. Write for details.



Takes only one minute per sq. ft.

ROCK-TRED Corporation

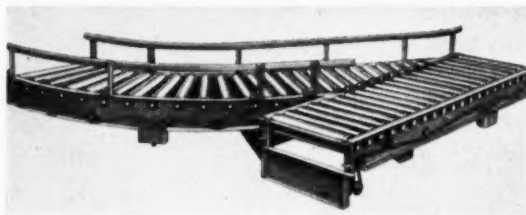
Manufacturers of a Complete Line of Building Maintenance Materials
7440-7450 North St. Louis Avenue • Skokie, Illinois
In Canada: Rock-Tred Corporation (Canada) Limited, Toronto 5



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FLOW • JUNE, 1954

Keeps Material Moving

A new, compact, power driven "Y" unit that is said to eliminate clogging and "jam ups" on converging conveyor lines by keeping material moving, is being marketed by Harry J. Ferguson Co. The unit consists of a power driven 90 degree



roller conveyor curve and a five foot long, live straight roller conveyor section, both of which are chain driven by a single 1/2 hp gearhead motor through universal joints. Offering speeds up to 90 fpm, it can be incorporated into all types of package conveyor lines, whether on the floor or suspended from the ceiling.

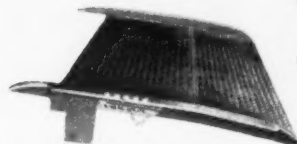
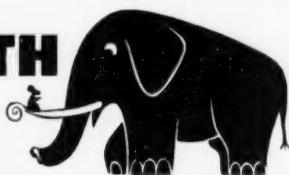
Circle 210 on Reader Service Card for more information

Provides Operating Record

Engler Instrument Company has announced a new precision-built instrument to provide an accurate operating record for portable and stationary engines. The instrument, called Engler D.C. Hour Log operates on direct current. It can

STRENGTH

without weight . . .



built into every

MAGFAB MAGNESIUM DOCKBOARD

Get all the advantages of high-capacity steel—at one-fourth the weight of steel—with MAGFAB dockboards. They eliminate delays . . . take on the toughest job safely, with effortless ease . . . reduce to minimum all problems of positioning, moving and storing.

Full facilities for designing low-cost, extra-strength boards.

Magnesium FABRICATORS, Inc.

ENGINEERING • DESIGNING
FABRICATING

MAGFAB

LINWOOD
MICHIGAN

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Check THESE EXCLUSIVE FEATURES



Non-slip surfaces—made to famous "Inland" 4-way safety design—in both adjustable and flush types. Positive, spring-loaded locking of adjustable support. Exclusive full-length contour curb with full length hand rail. Special designs engineered in capacities to 18,000 lb. All personnel well experienced in magnesium fabrication.



DILLON Crane Scales ARE LOWEST IN COST...

greatest value in scale field today!

Dillon portable crane scales combine weighing and load movement in *one operation*. Cut handling time over 50%. 100% MECHANICAL OPERATION. (No fluids to leak.) GUARANTEED ACCURACY TO WITHIN ONE DIVISION. Large 16" dia. dial, with red indicator, assures easy reading. No-flutter pointer registers instantly. TARE RESET compensates for weight of lifting slings, etc.

Dillon scales are constructed to withstand constant, rugged use. PROTECTED AGAINST ACCIDENTAL OVERLOADING AND SHOCK RECOIL. Unaffected by wide temperature variations. Strong plastic crystal covers the dial. HUSKY SWIVEL HOOK ROTATES 360° ON HEAVY-DUTY BALL BEARING.

Dillon crane scales are compact, economical and dependable. IDEAL FOR FACTORY BAY, YARD OR FIELD. Can't wear out under normal use. Quickly pay for themselves!

W.C. DILLON & Co., Inc.
14620Q Keswick Street
Van Nuys, California
(Suburb of Los Angeles)

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weigh
and
transfer
with only
1 pickup



WRITE FOR FREE
ILLUSTRATED
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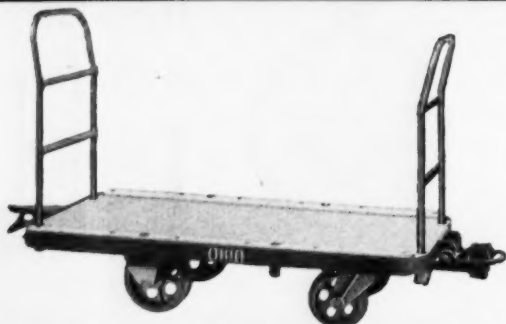


Contains helpful price and weighing information. Gives detailed data on various capacities available.

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OHIO

Industrial Trucks & Trailers



One Piece Tee Section Steel Frame Trailers

No. 2001 size 36" wide x 72" long x 14" high—Two Ton Capacity with Automatic Coupler, Molded-On Tires and Hardwood Top.

Various Platform Sizes may be furnished.

Heavy Duty Trucks and Trailers to YOUR Specifications. Write for Detailed Information.

THE OHIO GALVANIZING & MFG. CO.
NILES — Established 1902 — OHIO



Bond Universal Lift Jack and Platform



Bond Self Load-Unload Drum Truck

Best for
Materials Handling
Bond
PRODUCTION
BUILDERS

See your industrial distributor

... use his qualified services in selecting, and maintaining the right Bond equipment for your jobs. Write for your copy of Bond Catalog K-38.

**BOND FOUNDRY
& MACHINE CO.**
Manheim, Pa.



36-A Series—Double Ball Race Swivel Caster

1-A Series—Stationary Caster

Speed your materials handling with Bond equipment. Bond casters, lift jacks and hand trucks build more efficient production... make it faster, easier, more profitable. And all Bond equipment is rugged, dependable... built for years of trouble-free service.

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be installed on fork trucks, tractors, trucks or construction equipment and tells exactly how long each piece of machinery has been operating. The instrument is completely sealed, ruggedly built and is said to be tamperproof.

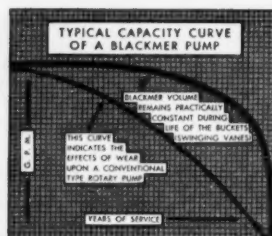
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Spark Proof Fork Truck

The Buda Company, an Allis-Chalmers Division, is featuring a spark proof fork truck in its "FT Series". The truck is available in the 3000 to 7500 pound capacities at 24 inch load centers. It is equipped with a Buda diesel engine, water manifold, water muffler, hydraulic starter and numerous other facilities said to provide maximum protection against fire and explosion hazards. No electric equipment of any kind is used on the trucks. Operating costs and maintenance are said to be greatly reduced. The truck may be equipped with either solid or pneumatic tires.



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**BLACKMER
DESIGN**
means low
pumping
costs...

1. Blackmer's swinging and sliding vane principle assures maximum efficiency, positive priming characteristics, and continuing high rate of delivery. Metallic or composition vanes which are self adjusting for wear insure peak performance through years of hard use. When the vanes finally wear, it is easy to replace them and restore the pump to normal capacity in a matter of minutes.
2. The Blackmer design also features replaceable cylinder liners enabling pumps operating under severe conditions or corrosion and abrasives to be renewed at minimum cost.
3. Proper shaft alignment and easy maintenance result from the use of heavy duty bearings which are isolated from the pumpage.
4. The Blackmer pressure control valve, an integral part of the pump, provides minimum variation from set pressure and protects the unit against damage by accidental shut-offs in the discharge system.
5. Pumps are available with speed reduction equipment for operation by all types of power drives (Motors, Engines, Turbines, etc.)
6. Blackmer rotary pumps supply the answer to a wide range of LIQUID MATERIALS HANDLING problems involving delivery to 1500 GPM — viscosities through 100,000 SSU — discharge pressures through 150 PSI — temperatures to 600°F.



liquid materials handling

BLACKMER

Industrial, Hand and Truck Pumps, Strainers, Pressure Control Valves
BLACKMER PUMP COMPANY, GRAND RAPIDS 9, MICH.

DIVISION SALES OFFICES — NEW YORK • ATLANTA • CHICAGO
GRAND RAPIDS • DALLAS • WASHINGTON • SAN FRANCISCO

See Yellow pages for your local sales representative

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FLOW • JUNE, 1954

Torque Converter Standard Equipment

The Frank G. Hough Co. has recently announced the introduction of new models of the "HA" and "HAH" front-end shovel-loaders with torque-converter-drive as standard equipment. In addition, the "HAH" model is equipped with power steering. In accordance with this manufacturer's present policy, both "struck-load" and "pay-load" capacities of these models are now listed. The new drive is said to offer a substantial reduction in the amount of gear shifting and clutching and concentration required of the driver, making possible faster cycles and higher sustained output.

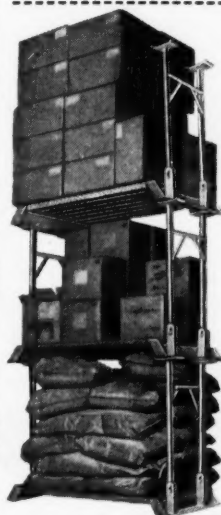
Circle 213 on Reader Service Card for more information

Portable Communication

The Radio Specialty Manufacturing Company has developed an 8 pound 2 channel transmitter-receiver. Termed the "Minipak", the battery operated FM radio unit was especially designed and engineered for forestry people, construction crews, survey parties and organizations needing

SAFELY TIER...

Fragile, Soft, Irregular Shaped, Mixed Merchandise
with any FORK LIFT TRUCK and



ALL **E-I-W** STEEL

MULTI-STAK Pallet Stacker Unit

No weight ever rests on the merchandise! All-steel pallets with self-supporting standards in a variety of sizes. Unit capacity: 4,000 lbs. Stacked static capacity: 20,000 lbs.



Supporting Standards lock in secure upright position

Carried and Tied by Fork Truck



Write for Descriptive Folder and Specifications

ELIZABETH IRON WORKS, Inc.
Materials Handling Specialists, Steel Fabricators SINCE 1907
538 GREEN LANE, ELIZABETH, N. J.

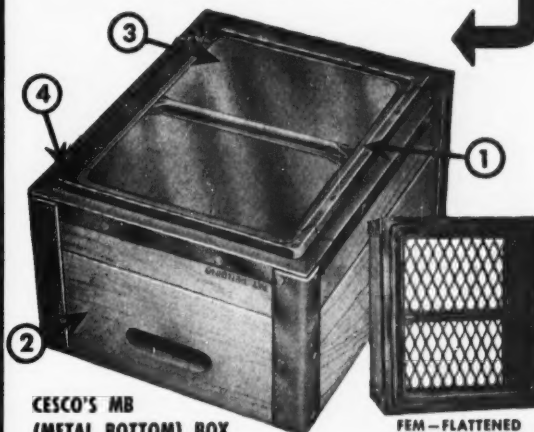
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Cesco's TOTE-SHOP BOXES

...Do Your Job • EFFICIENTLY • EASILY • ECONOMICALLY
ON CONVEYORS, PALLETS, HAND TRUCKS,
SKID PLATFORMS, OR WHAT HAVE YOU



1. Heavy Duty Strut . . . Prevents Sag . . . Permits Bottom Flex . . . Distributes shock.
2. High Grade Hard Wood Lumber .
3. (FM) Flat Metal Bottom . . . likewise available in open type bottoms FEM-FPM-WM illustrated below.
4. Specially designed "Bottom Stacking Runner" . . . One piece . . . Rounded Corners (No Mitered Joints — No Distortion).



CESCO'S MB (METAL BOTTOM) BOX

(Prices net - per box)	MB-20	MB-24
Lots of 2000.....	\$2.65	\$3.00
1000 — 1999.....	2.68	3.03
500 — 999.....	2.71	3.06
250 — 499.....	2.74	3.11
100 — 249.....	2.81	3.16

2 STANDARD SIZES

MB-20: 14½" x 11¼" x 9¾"

MB-24: 17½" x 11¼" x 9¾"

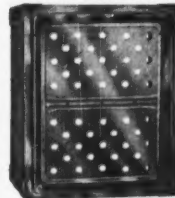
F. O. B. Northampton, Mass.

CESCO'S WB (WOOD BOTTOM) BOX
Depending upon the material packed and the handling method stock sizes will accommodate loads up to 200 lbs.; possibly greater.

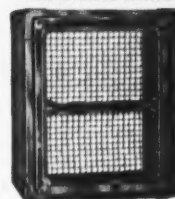
- Ruggedly constructed . . . steel reinforcing features of zinc coated prime stock . . . Self Stacking . . . convenient hand holes
- Binding rivets PLUS corner lock style yields maximum rigidity

Write today for quotations on special sizes . . . Please submit specifications.

FEM — FLATTENED EXPANDED METAL



FPM — FLAT PERFORATED METAL



WM — WIRE MESH

CESCO'S WB (WOOD BOTTOM) BOX

(Prices Net - per box)	WB-1	WB-2	WB-3
Lots of 2000	\$1.96	\$2.14	\$2.28
1000-1999	1.99	2.17	2.31
500-999	2.02	2.20	2.34
250-499	2.07	2.25	2.39
100-249	2.12	2.30	2.44

No. 1 size — (I.D.) — 14½" x 11¼" x 9"

No. 2 size — (I.D.) — 18" x 11¼" x 9"

No. 3 size — (I.D.) — 20" x 11¼" x 9"

F. O. B. Northampton, Mass.

● Wire Baskets ● Special Pallets ● Tote Trays

CESCO CONTAINER CO.

475 Fifth Avenue
New York 17, N. Y.
Factory: Northampton, Mass.

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Circle No. 11 on Reader Service Card for more information

New Low Prices on Equipto Iron-Grip* Shelving

"Custom" Quality Unchanged

Expanded plant facilities and advanced machinery and equipment now enable Equipto to reduce prices up to 20% on IRON-GRIP Steel Shelving.

And you get the same outstanding features that IRON-GRIP has always offered—60% faster shelf assembly and adjustment . . . exclusive steel studs eliminate nuts, bolts and tools . . . heavy gauge angled steel uprights . . . channel sided shelves that hold 600 lb load without reinforcement . . . independent construction that prevents moving units intact without disturbing assembly.

See for yourself! Visit your Equipto distributor today!



A slope in the keyhole joins with the taper on the stud to form the tightest and strongest of grips. An exclusive Equipto design.

***T.M. Equipto**
Division of Aurora Equipment Co.
805 Prairie Ave., Aurora, Illinois
Steel Shelving . . . Parts Bins . . . Drawer Units

extremely lightweight communication equipment. The batteries in the unit have a normal operating life of over 8 hours. The removable whip antenna folds up into a zipper carrying case, which is furnished with the equipment.

Circle 214 on Reader Service Card for more information

Clamping Attachment Utilizes Space

An overhead clamp with side shifter for use with electric fork trucks has been developed by Lewis-Shepard Products, Inc. The new attachment is said to make possible the utilization of every inch of storage space. Cartons are clamped from top and bottom.



A safety interlock prevents clamping unless the carton is in the proper position. With the side shifter, the operator is able to move the carton 4 inches to either side of center for exact positioning of load, without moving the truck. Both clamping and shifting operations are hydraulically controlled.

Circle 215 on Reader Service Card for more information



CHAINVEYOR

**NEW
LOW COST
OVERHEAD
CONVEYOR**
of
Revolutionary
Design
for loads up
to 60 lbs.
per foot.

Typical Industrial Installation—illustrates flexibility and simplicity of installation. System is 190 feet long with equivalent of 52 vertical and horizontal 45-degree curves. Total weight carried, 5800 lbs. Driven by 1/2 HP motor at speed of 10 to 30 F.P.M.

We can't adequately describe the advantages of CHAINVEYOR in limited space. Completely enclosed—Simplicity of design—Reduced bulk, weight—15" radius curves—Full ball bearing chain—Curves, chain scientifically heat-treated to "file hardness" triples life—Simple rugged power drive—So easily installed that most buyers do it themselves for a total cost that is most interesting.

New catalog gives complete information
Write for it!

Nationally Distributed by
**MATHEWS CONVEYER
COMPANY**
Eliwood City, Pa.
with offices in all
principal cities.



United States Spring & Bumper Co.
4951 Alcoa, Box 2475 Terminal Annex
Los Angeles 58, California

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174



FOR BETTER HANDLING

Look under "Trucks" or "Casters" in your classified phone directory for your nearest Nutting representative.
SINCE 1891
Or write direct for Junior Catalog 54G.

Nutting

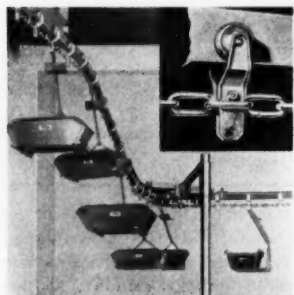
TRUCK & CASTER CO.
1408 Division St. Faribault, Minn.

Export Sales Representative Scheel International, Inc.
4287 North Lincoln Avenue, Chicago 18, Ill.

Circle No. 107 on Reader Service Card for more information
FLOW • JUNE, 1954

Easily Installed Conveyor

The Cincinnati Automatic Conveyor Company has engineered and developed a new junior conveyor system that is



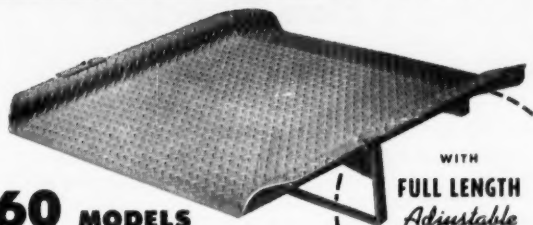
said to be easy to install and readily dismantled and rearranged. Trolleys are normally spaced at 8, 12, 16 or 20 inch centers. The spacing may be modified by the removal of a single bolt, without disturbing the turn or drive sprocket. Trolleys of 40 and 80 pound capacities are available. Heavier loads may be accommodated by installation of load bars between trolleys. Chain strength is 6000 pounds, with a yield point of 4000 pounds. Various ranges of speed are available, from 0.8 to 60 fpm. The unit is being marketed under the trade name Trol-E-Veyor.

Circle 216 on Reader Service Card for more information

**Your Inquiries Get
Immediate Attention!**
Use The Reader Service Card
Bound Into This Issue.



- * LIGHT WEIGHT
- * STURDY CONSTRUCTION
- * EASILY HANDLED
- * SAFETY TREAD
- * CAPACITY RATED
- * TIRE PROTECTION



60 MODELS

IN CAPACITIES UP TO 3000 LBS. AXLE LOAD

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The integral formed side rail and full length position lock features of the Milwaukee VERSATILE Standard Formed Dockboard combine to make possible the safest and most adaptable line of dockboards available.

WITH
**FULL LENGTH
Adjustable
POSITION LOCK**

SEE HOW THE FULL LENGTH POSITION LOCK
SECURES THE MILWAUKEE VERSATILE
STANDARD FORMED DOCKBOARD
FOR ALL SPANS



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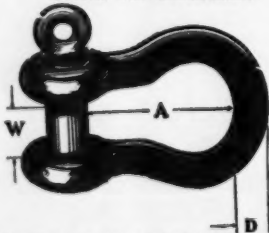


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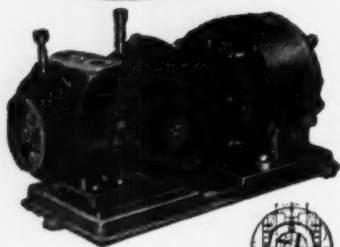
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Eliminate Oil Vapors from Discharged Air

The new Kraissl Class 23 pumps completely eliminate undesirable oil vapors from discharged air. In many operations, this means a tremendous saving to you—in time, materials and industrial health. Pumps are dry lubricated—displacement blades take up their own wear. Positive, fan-cooling for continuous high performance. Available with double extended shaft for group installation from single power source. Performance data: 1750 RPM, but not limited to this speed. Capacities from 5 cfm—20 cfm, for single units; larger capacities by group drive.

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Close Quarters Fork Truck

A newly designed line of stand-up, end-control AISLE SAVER electric trucks has been announced by the Crescent Truck Division of the Barrett-Cravens Company. Manufactured in capacities of 1000-4000 lbs., these trucks can be furnished with standard or special high or low free lifts, as well as with a full range of attachments. Exceptionally short turning radius, better visibility and shockproof steering are three of the major improvements incorporated into these trucks which have four speeds in both directions. Three different gear reductions can be furnished: one for normal speeds, the others for extra high speeds. Solid rubber or cushion tired drive wheels are furnished as standard equipment. The battery used in the truck is of sufficient capacity to provide more than ample power for a full day's operation.



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WISCONSIN- POWERED HAISS CAR UNLOADER

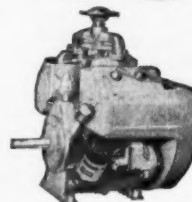


Speeds Up Material Handling

This Hais Model 501 combination chain- and belt-type Car Unloader, made by the George Hais Mfg. Co. division of Pettibone Mulliken Corp., provides another typical example of a time- and cost-cutting Wisconsin Engine power application.

Wisconsin Heavy-Duty Air-Cooled Engines have the "engineered-in" Lugging Power that stays with the job. When sudden shock loads slow down the engine speed and the torque builds up, your Wisconsin Engine hangs on and pulls through without stalling. Heavy-duty engineered design and construction, plus trouble-free AIR-COOLING, are factors that keep the work moving on schedule at all seasons, in all climates.

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V-type 4-cylinder
15 to 36 hp.



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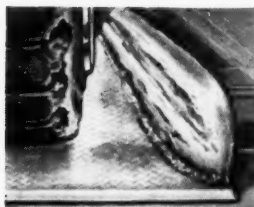
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FLOW • JUNE, 1954

THIS is the **BIG** difference in **Dock Boards!**

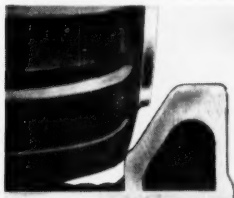
... A SAFETY CURB THAT PREVENTS DAMAGE TO POWER TRUCK TIRES!

**THIS IS THE BIG DIFFERENCE THAT CAN HAND YOU BACK
YOUR DOCK BOARD INVESTMENT—THROUGH REDUCED
TIRE WEAR ALONE . . . PLUS GIVING YOU LONGER
AND SAFER SERVICE FROM YOUR DOCK BOARDS!**



HERE ARE THE FACTS!

Normal curb design found in most of today's dock boards permits undesirable metal-to-metal contact between power truck wheel rims and the side curb. These repeated daily contacts create sharp, jagged edges in the side curb, which in turn cut and gouge tires. In addition, the side curbs are weakened and service life of the board is reduced.

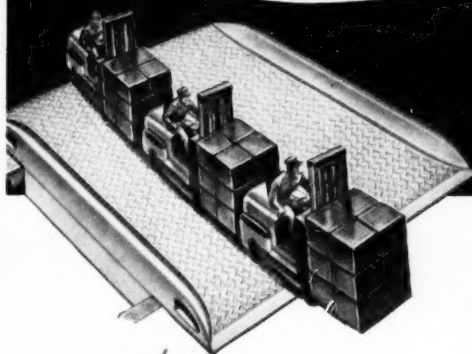


The new Magliner *Tire-Saver side curb is specifically designed to prevent these two costly conditions. Design of the curb is such that only the tire can make contact with the curb rail. Metal-to-metal contact is avoided—side curbs retain full design strength . . . and this common cause of tire damage is prevented!



Magliner

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DOCK BOARDS**



*Write for
Bulletin*
DB-204

*Pat. Pending

are Engineered for **YOUR** Dock Conditions!

Engineered for Span—From measurements taken by experienced Magliner field representatives—at your docks!

Engineered for Special Dock Conditions—No two docks are the same. Here the experience of your Magliner representative is vitally important in determining the right board for you!

Engineered for Equipment Underclearance—Every Magliner dock board is engineered with the proper crown angle, to meet the underclearance requirements of your loading equipment (i.e., pallet trucks, fork trucks, etc.).

Your BEST Dock Board Value— is Magliner!

LIGHT—Engineered from the world's lightest structural metal for safe lifting, fast positioning, easy storage! **STRONG**—Designed like a bridge to carry your heaviest loads . . . with capacity to spare! **SAFE**—Chamfered plate edges minimize load jar. Curb ends are radiused to permit wide turns—double strength to absorb impact loads! Positive lock insures against slipping.

Write for complete descriptive literature and the name of your nearest Magliner representative today!

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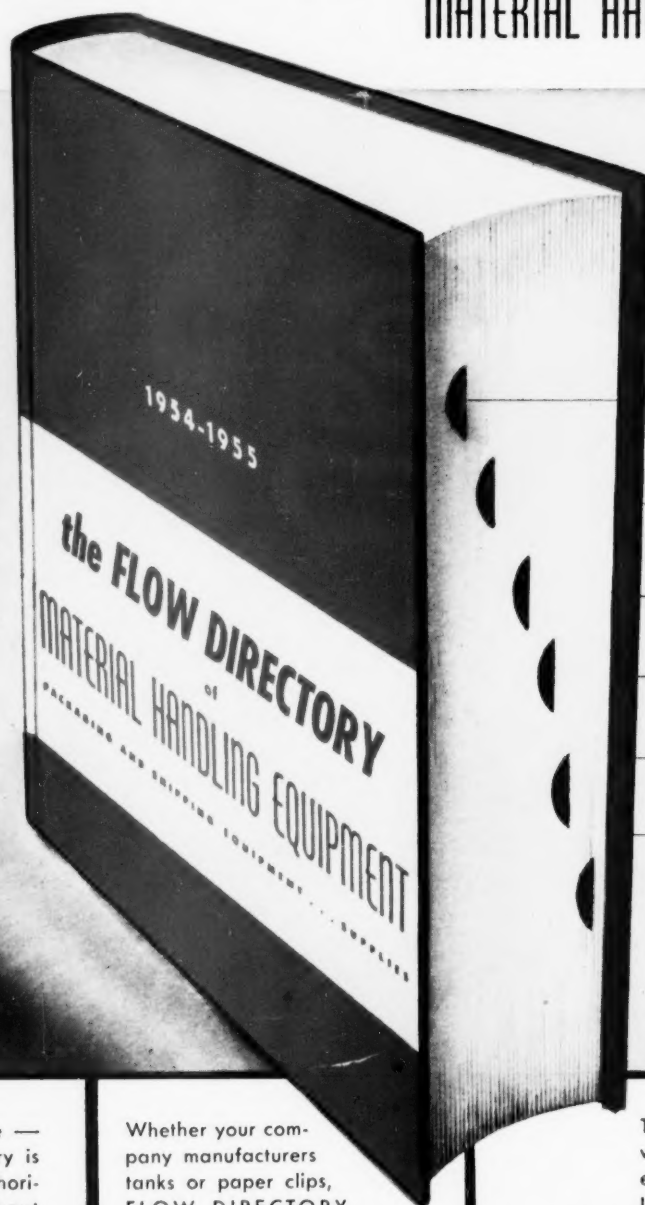
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